



# **PANDORA**FMS

**Smart monitoring for  
everyone**

March 2022

# Features overview

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- Network and communications
- Servers and infrastructure
- User experience
- Application performance
- Log collection
- Service level
- Cloud
- Inventory and CMDB
- Network Configuration Management
- Remote control
- ITSM and Service desk
- Dashboards & reporting
- IT Automation
- SAP monitoring
- Z-Series monitoring (Mainframe)
- Business process monitoring
- High scalability and centralization
- Monitoring for MSP's
- IoT projects
- OEM and custom integrations



# Who uses Pandora FMS?



TOSHIBA Rakuten

Allianz 



santalucía  
SEGUROS

*Telefonica*



AON



MCM  
TELECOM

HUGHES

Salvesen  
Logística



Developed by ArticaPFMS, a Spanish company founded in 2005, with **customers in more than 50 countries**. Companies of all sectors and sizes use Pandora FMS for their IT operation.

# Server & Network



Measure •  
Control •  
Correct & Improve •

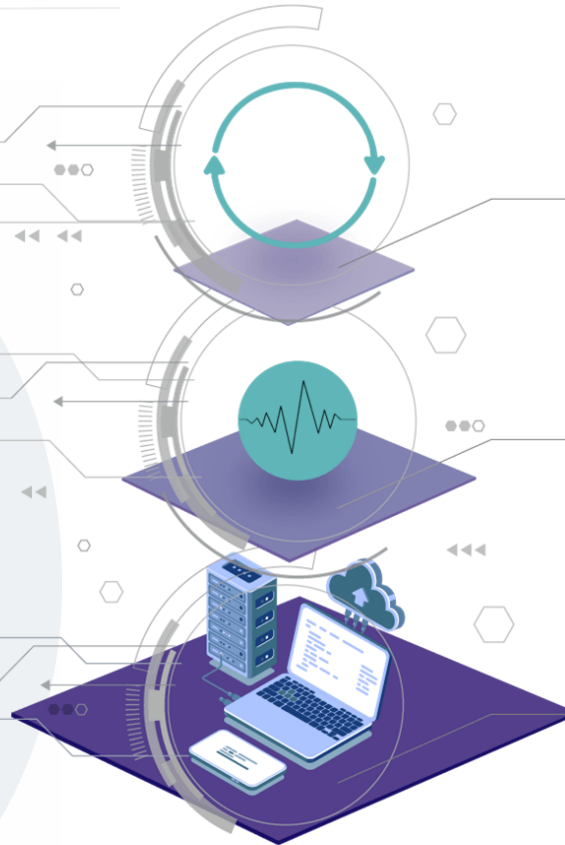
**Business**

Business process •  
KPIs •  
User Experience •

**Apps**

Outsourcing •  
Silos •  
Cloud •

**Infrastructure**



# Who uses Pandora FMS?



Know what matters, leaving aside technical details: imagine having a scorecard in real time that really interests those responsible. Imagine being able to map all your services on a single screen.

- IT and communications Management
- Applications Projects
- Customer service
- Third party agreement services



# Why Pandora FMS?

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- **Unified monitoring:** While other manufacturers provide features in separate products, we have included them in a single license. Pandora FMS is a TRUE all-in-one monitoring software.
- **Go to root cause:** Waterfall of errors? Even storms? Use our service topology to see hidden intermediate events and go to the root cause directly.
- **Smart monitoring:** dynamic thresholds, autodiscovery, smart templates, auto-provisioning... Make your life easier.

# Why Pandora FMS?

- Pandora FMS makes it possible to optimize your IT and save money.
- “F” comes from flexibility. We can adapt to your organization.
- Pandora FMS has a better TCO. Even from the first year.
- Custom support level: From standard to monitoring as a service with remote operation if you need.
- Superior scalability: From hundreds to thousands of devices in a single setup installation.
- It can be installed on-premise or in the cloud as SaaS.





**NETWORK  
MONITORING**



# Network Monitoring



Using network servers or distributed servers ,(Satellite servers) Pandora FMS can gather information from remote equipment, servers, applications and other connected devices. This kind of monitoring is very easy to deploy, you have quick responses and Pandora FMS is very scalable, that means you can monitor thousands of devices in minutes.



# Network Monitoring

## Network Devices



Monitoring / SNMP  
SNMP BROWSER

Target IP: 127.0.0.1 Port: 161

Version: v.3

> SNMPv3 settings

> Search options

- IP-MIB
  - ifIndex
  - ifDescr
    - 1
    - 2
  - ifType
  - ifMTU
  - ifSpeed
    - 1
    - 2
  - ifPhysAddress
  - ifAdminStatus
  - ifOperStatus
  - ifLastChange
  - ifOutlets

From **SNMP to WMI**, custom remote probes of all kinds. Advanced SNMP polling for **IPv4** and **IPv6**, layer-link detection on switches, network latency, packet loss, interface usage, etc. Lots of **wizards**

Add general monitoring for all selected interfaces

Module Name	Type	Module Info	Warning			Critical			
			Min.	Max.	Inc. %	Min.	Max.	Inc. %	
ifOperStatus	🔌	The current operational state of the interface (up(1), down(2), testing(3), unknown(4), dormant(5), notPresent(6), lowerLayerDown(7))	0	0	0	0	0	0	🔌
ifInOctets / ifHCInOctets	📊	The total number of octets received on the interface, including framing characters	0	0	0	0	0	0	🔌
ifOutOctets / ifHCOutOctets	📊	The total number of octets transmitted out of the interface, including framing characters	0	0	0	0	0	0	🔌
ifInUcastPkts / ifHCInUcastPkts	📊	The number of packets, delivered by this sub-layer to a higher (sub-)layer which were not addressed to a multicast or broadcast address at this sub-layer	0	0	0	0	0	0	🔌
ifOutUcastPkts / ifHCOutUcastPkts	📊	The total number of packets that higher-level protocols requested be transmitted, and which were not addressed to a multicast or broadcast address at this sub-layer, including those that were discarded or not sent	0	0	0	0	0	0	🔌
ifInMulticastPkts / ifHCInMulticastPkts	📊	The number of packets, delivered by this sub-layer to a higher (sub-)layer which were addressed to a multicast or broadcast address at this sub-layer	0	0	0	0	0	0	🔌
ifOutMulticastPkts / ifHCOutMulticastPkts	📊	The total number of packets that higher-level protocols requested be transmitted, and which were addressed to a multicast or broadcast address at this sub-layer, including those that were discarded or not sent	0	0	0	0	0	0	🔌
ifInCRC	📊	Number of input packets which had cyclic redundancy checksum errors.	0	0	0	0	0	0	🔌
Bandwidth	📊	Amount of digital information sent and received from this interface over a particular time (see interval).	0	0	0	0	0	0	🔌
inUsage	📊	Databits usage received into this interface over a particular time (see interval).	0	0	0	0	0	0	🔌
outUsage	📊	Databits usage sent from this interface over a particular time (see interval).	0	0	0	0	0	0	🔌
ifAdminStatus	🔌	The desired state of the interface (up(1), down(2), testing(3))	0	0	0	0	0	0	🔌
ifDiscards	📊	The number of inbound packets which were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol	0	0	0	0	0	0	🔌
ifOutDiscards	📊	The number of outbound packets which were chosen to be discarded even though no errors had been detected to prevent their being transmitted	0	0	0	0	0	0	🔌
ifErrors	📊	For packet-oriented interfaces, the number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol. For character-oriented or fixed-length interfaces, the number of inbound transmission units that contained errors preventing them from being deliverable to a higher-layer protocol	0	0	0	0	0	0	🔌
ifOutErrors	📊	For packet-oriented interfaces, the number of outbound packets that could not be transmitted because of errors. For character-oriented or fixed-length interfaces, the number of outbound transmission units that could not be transmitted because of errors	0	0	0	0	0	0	🔌

Please note that ALL SCREENS shown in this presentation are real screenshots from Pandora FMS console.

















# SNMP Trap Collection & Alerting

- Instantly detect any interface drop, CPU overload, or when a UPS changes state.
- Multithread trap parser and trap filtering and forwarding.
- Capture of dynamic variables in complex traps.

SNMP CONSOLE > ALERT OVERVIEW

> Alert SNMP control filter


Total items: 4

P	Alert action	SNMP Agent	Enterprise String	Custom Value/Enterprise String	Description	TF	Last triggered	Action	
0	Mail to Admin		.1.3.6.1.2.1.2.2		SNMPAlert	0	Never	  	
0	Mail to Admin		.1.3.6.1.1.1.2.6		SNMPOID String	0	Never	  	
0	Mail to Admin		.1.3.6.1.2.1.2.2			0	Never	  	
0	Mail to Admin		.1.3.6.1.2.1.2.2			0	Never	  	

Total items: 4

LEGEND

- Maintenance
- Informative
- Normal
- Minor
- Warning
- Major
- Critical
- Warning/Critical
- Not normal
- Critical/Normal

Delete selected items: 

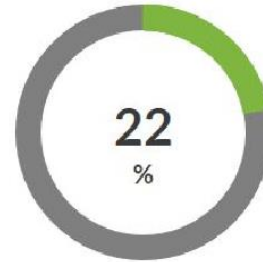
Create >

# Network Monitoring Autodiscovery

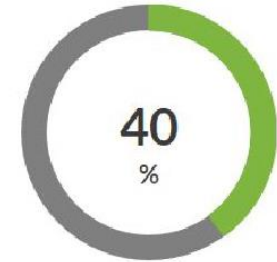
Find out new elements in your network automatically and start monitoring them with our self-supply system. Add your own discovery or high availability scheme massively in your machines through a CSV.



Overall Progress



Scanning network 192.168.80.0/24



Summary

Hosts discovered	0
Alive	61
Not alive	159
Responding SNMP	0
Responding WMI	0

# Network Monitoring

## Network Mapping



### Edit node 192.168.0.252

**Node details**

Agent: 192.168.0.252  
Addresses: 192.168.0.252  
OS type: Satellite  
Group: Unknown

**Interface Information (SNMP)**

Name	Status	Graph	IP	MAC
eth1/0/1	<span style="color: green;">■</span>	..	..	8C:26:89:B9:99:69

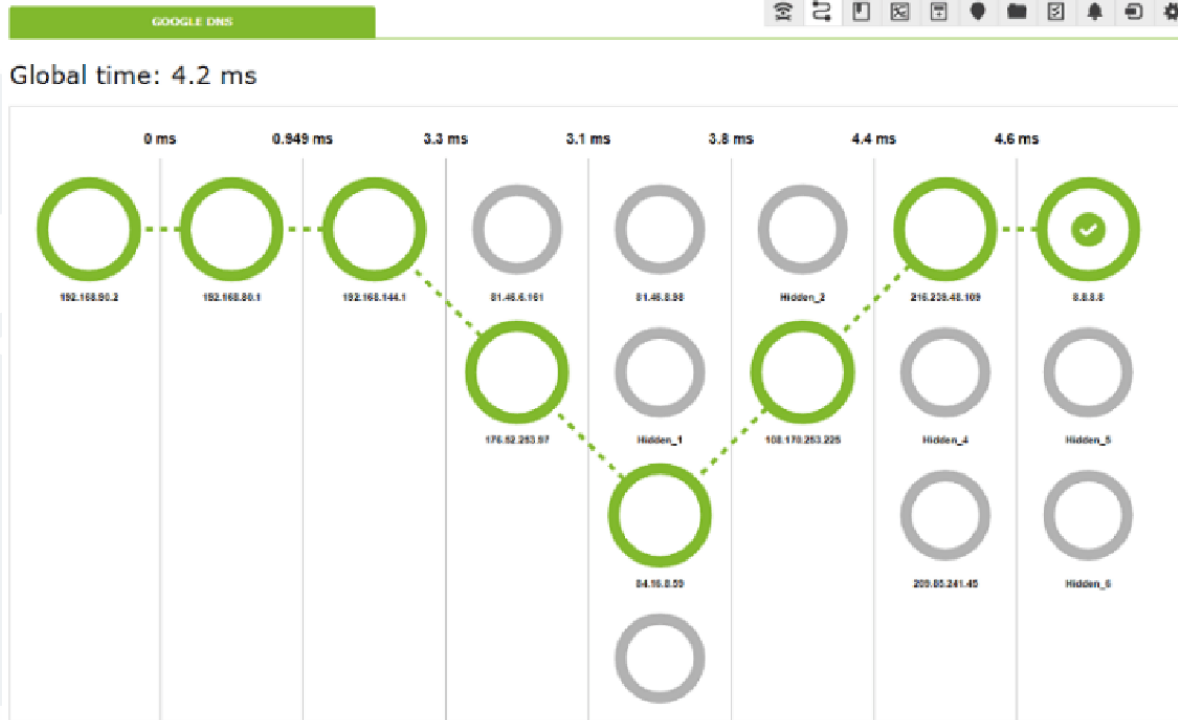
**Node Options**

Shape:   
Name:

**Relations**

Node source	Interface source	Interface target	Node target	E
192.168.0.1	<input type="text" value="None"/>	<input type="text" value="None"/>	192.168.0.252	<input type="button" value="E"/>

# Routing path Monitoring



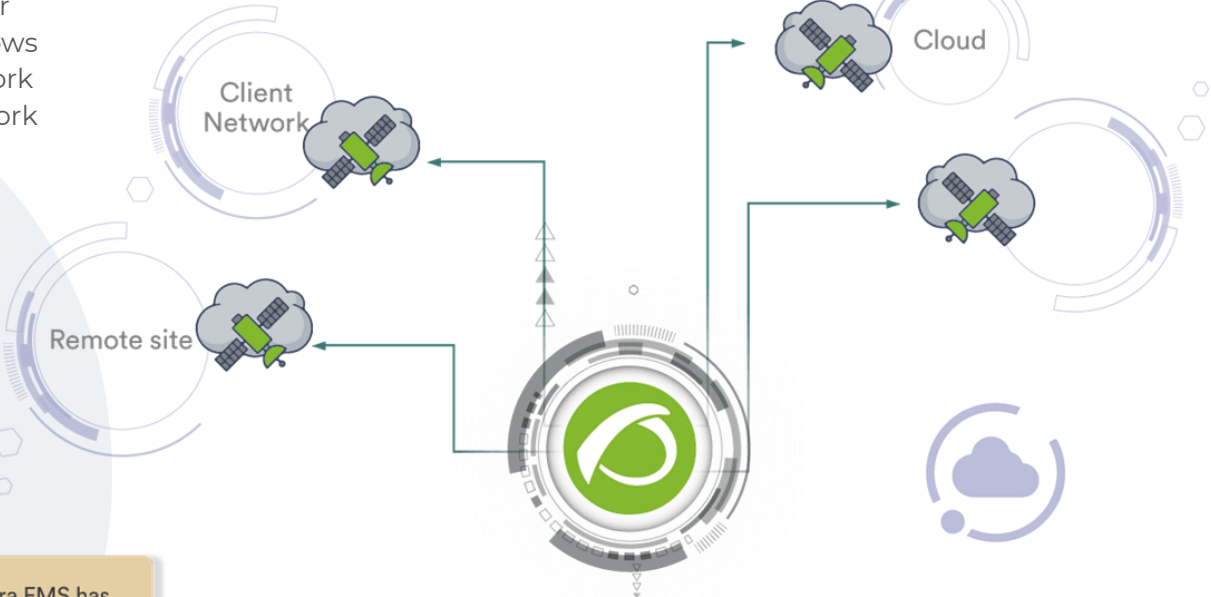
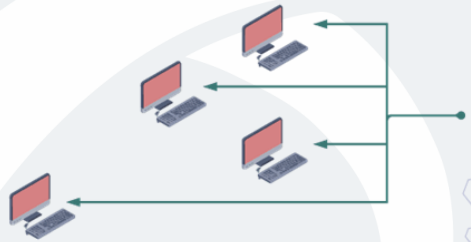





# Network Monitoring Satellite Servers



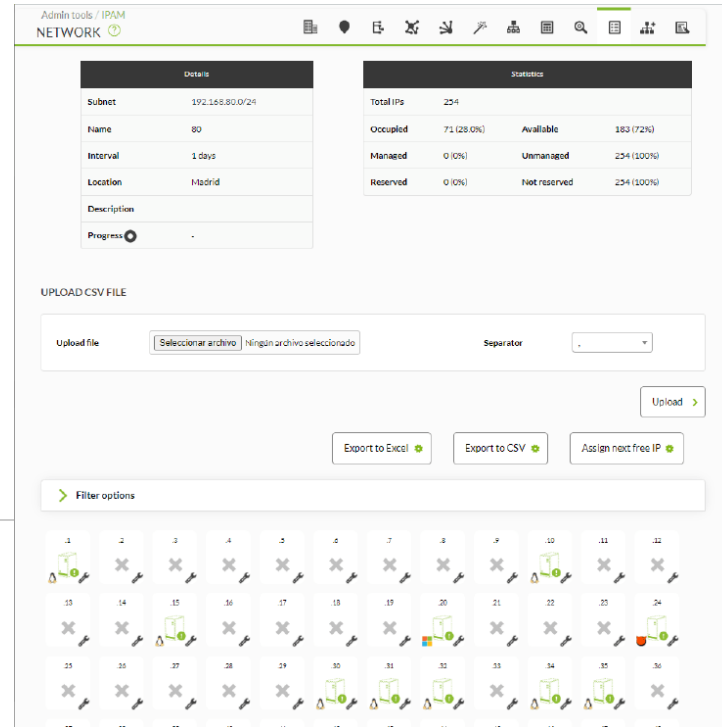
Satellites can discover and monitor network devices, Linux and Windows without using agents. They can work “offline” and after a complex network topology, as customer offices, roaming networks, etc.



 Satellite is a tool used when Pandora FMS has no visibility of the networks to be monitored.

# IPAM (IP Address Management)

Supernets, IP usage monitoring, integration with Microsoft DHCP, supernet mapping, reservation system, reports and subnet calculation.



The screenshot displays the IPAM interface with the following components:

- Admin tools / IPAM NETWORK** header with navigation icons.
- Details Table:**

Details	
Subnet	192.168.80.0/24
Name	80
Interval	1 days
Location	Madrid
Description	
Progress	0%
- Statistics Table:**

Statistics			
Total IPs	254		
Occupied	71 (28.0%)	Available	183 (72%)
Managed	0 (0%)	Unmanaged	254 (100%)
Reserved	0 (0%)	Not reserved	254 (100%)
- UPLOAD CSV FILE** section with an upload file input, separator dropdown, and an Upload button.
- Export buttons: **Export to Excel**, **Export to CSV**, and **Assign next free IP**.
- Filter options** section with a grid of IP addresses (1-48) and their status icons (e.g., available, reserved, managed).

# Network Monitoring

## Cluster Monitoring



### Monitor any kind of Cluster

Cluster list / Cluster details  
CLUSTER DETAILS > CLUSTER

#### Cluster

Cluster  
Cluster agent  
PMFS

1

Selenium-02 - Connections open...  
Selenium-02 - Connections open...  
Selenium-01 - Connections open...  
Cluster  
Selenium-01 - CPU Usage  
Selenium-02 - CPU Usage  
Selenium-02 - CPU Usage

#### Events (Last 24h)

#### List of modules

Status: All Free text for search (\*) Module group All Show in hierarchy mode Filter Reset

F	P	Type	Module name	Description	Status	Thresholds	Data	Graph	Last contact
0	1	Cluster status	Cluster status	Cluster status information module	OK	0/1 - 0/2	0	OK	1 minutes 48 seconds
0	...	Connections opened	Connections opened	Network connections used in this machine	OK	N/A - N/A	33.3333 conn/s	OK	1 minutes 48 seconds
0	...	CPU Usage	CPU Usage	% of CPU usage in this machine	OK	N/A - N/A	0 %	OK	1 minutes 48 seconds

# Other Networking Features

- Integrated SSH / Telnet console to access devices.
- **Remote command execution** from console.
- Customized remote checks on demand for operators.
- Integrated **MIB Explorer**, with custom MIB loading.
- **Smart thresholds** that learn themselves from the network.
- Collect all SYSLOG network devices.
- **Real time SNMP graphs.**



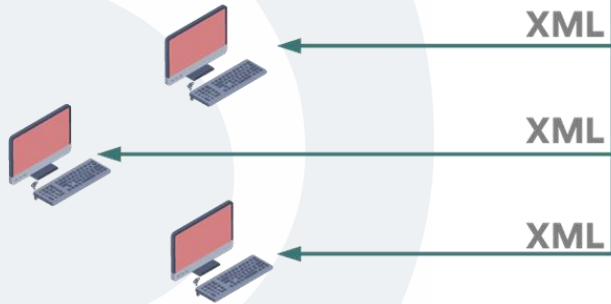
**SERVER**

Infrastructure Monitoring



# Agent Architecture

Software agents allow to get low-level metrics from servers, applications and core elements of infrastructure. Information obtained from agents is usually much more detailed and software agents have infinite possibilities to gather key information. Pandora FMS agents are very powerful.



 **PANDORAFMS**

**Pandora Server**

# OS Monitoring

- Support native Windows (all range from NT4), Linux (Redhat, Centos, Debian, Ubuntu), BSD, Solaris, AIX and z/OS.
- Get CPU, Disk, licensing, process internals, application parameters and status.
- Custom-made plugins are easy to create and deploy.
- 100% centralized, GUI management.
- No command line / shell access required for operation.
- Remote configuration works with firewalls, proxy and other topology problems.



## Red Hat



## CentOS

# Performance & Availability Monitoring



The screenshot displays the Pandora FMS monitoring interface for a `node_agent`. The main dashboard shows a 100% health status and 15 active nodes. The agent contact information indicates an interval of 5 minutes and a last contact time of 4 minutes 20 seconds on January 13, 2022, at 1:50 pm. The agent is identified as Linux with IP address 192.168.80.231, created by pandorafms.

The interface includes several sections:

- Agent Info:** Shows other IP addresses (172.17.0.1, 172.18.0.1).
- Agent contact rate (Last 24h):** A bar chart showing contact frequency.
- List of modules:** A list of monitored services including `Service docker - Status`, `Service httpd - Status`, `Service myapp - Status`, and `Service postfix - Status`.
- Graphs:** Two line graphs showing CPU load. The main graph displays a peak of approximately 4.5% at 11:15. A smaller graph window shows a similar trend with a peak of about 4.5% at 11:15.

The bottom status bar shows system metrics: `Memoria: Usage Bytes`, `Total bytes transferred in this system`, `Null - N/A`, `79,541,1179 bytes/sec`, and `4 minutes 20 seconds`.



# Virtual Infrastructure



# Agent Remote Deployment



Deploy Linux/Windows agents remotely from the central console with **Discovery Deployment Center**.

Discovery / Host & Devices / Agent deployment  
DEPLOYMENT CENTER [?](#)

Scan for targets Add target Load targets

> Filter

Show  entries

IP	OS	Architecture	Key identifier	Target server IP	Agent version installed	Agent version desired	Installation date	Last error	Options
192.168.80.1	Linux	x64	pandora	192.168.80.230		759	-		
192.168.80.230	Linux	x64	pandora	192.168.80.231		759	-		
192.168.80.232	Linux	x64	pandora	192.168.80.231		759	-		

Showing 1 to 3 of 3 entries

Deploy agent to targets

# SERVER Infrastructure Monitoring

## Command Snapshot



Both Windows and Linux systems. Capture native output of commands in a text snapshot for analysis.

The screenshot displays the Pandora FMS interface for a 'TOP' module snapshot. The main window shows system statistics for 2022-01-19 14:57:39. A terminal window is open, showing the output of the 'top' command. The terminal output includes system load averages, task counts, CPU usage, memory usage, and a list of processes with their PID, USER, PR, NI, VIRT, RES, SHR, S, %CPU, %MEM, TIME+, and COMMAND.

**Current data at 2022-01-19 14:57:39**

```
top - 14:57:38 up 32 min, 1 user, load average: 0.53, 0.79, 0.99
Tasks: 136 total, 3 running, 133 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.0 us, 0.0 sy, 6.2 ni, 87.5 id, 6.2 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 3870664 total, 251044 free, 1419176 used, 2200444 buff/cache
KiB Swap: 3802108 total, 3799292 free, 2816 used, 2182092 avail Mem

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
7551 mysql 20 0 3485756 408228 9500 S 6.7 10.5 4:38.71 mysqld
15713 root 20 0 355908 22964 9032 R 6.7 0.6 1:12.48 plp
17797 pandora 20 0 2959996 98912 14588 S 6.7 2.6 0:09.90 java
1 root 20 0 125428 3908 2568 S 0.0 0.1 0:00.82 systemd
2 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kthreadd
3 root 20 0 0 0 0 S 0.0 0.0 0:00.18 kworker/0
5 root -20 0 0 0 0 S 0.0 0.0 0:00.00 kworker:0:0H
7 root rt 0 0 0 0 S 0.0 0.0 0:00.00 migration/0
8 root 20 0 0 0 0 S 0.0 0.0 0:00.00 rcu_bh
9 root 20 0 0 0 0 R 0.0 0.0 0:00.67 rcu_sched
10 root -20 0 0 0 0 S 0.0 0.0 0:00.00 lru-add-dra+
11 root rt 0 0 0 0 S 0.0 0.0 0:00.00 watchdog/0
13 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kdevtmpfs
14 root -20 0 0 0 0 S 0.0 0.0 0:00.00 netns
15 root 20 0 0 0 0 S 0.0 0.0 0:00.00 xenwatch
16 root 20 0 0 0 0 S 0.0 0.0 0:00.00 xenbus
18 root 20 0 0 0 0 S 0.0 0.0 0:00.00 khugepaged
```

The interface also shows a 'List of modules' section with a table of services and their status:

#	P	Type	Module name	Status
1			Service docker	Status
2			Service httpd	Status
3			Service mysqld	Status
4			Service postfix	Status

Below the terminal window, there are several monitoring cards for 'TOP', 'Networking', and 'System' metrics, each with a status indicator and a 'Last contact' time of 4 minutes 35 seconds.

- TOP**: N/A - N/A
- Networking**:
  - Network\_Usage\_Bytes: Total bytes/sec transferred in this system. 7,413.4522 bytes/sec
  - TCP\_Connections: Total number of TCP connections active. 52
- System**:
  - CPU iOWait: Too much iOWait means IO bottleneck and performance problems. 0/10 - 0/16 0%
  - CPU Load: User CPU Usage (%). 90/70 - 100/91 0%
  - DiskUsed\_/: % used space. Filesystem mounted: /dev/mapper/vg\_pandora-lv\_... 0/90 - 0/95 55%
  - DiskUsed\_/boot: % used space. Filesystem mounted: /dev/rnd1 0/90 - 0/95 26%

# Other Server Features

- Centralized rule-based provisioning system.
- API/CLI for automation in provisioning and later configuration.
- Packaged agents for unattended installation.
- OEM Installer for all installers.
- Direct and inverse proxies if your topology is complex.



# **USER EXPERIENCE**

## Monitoring

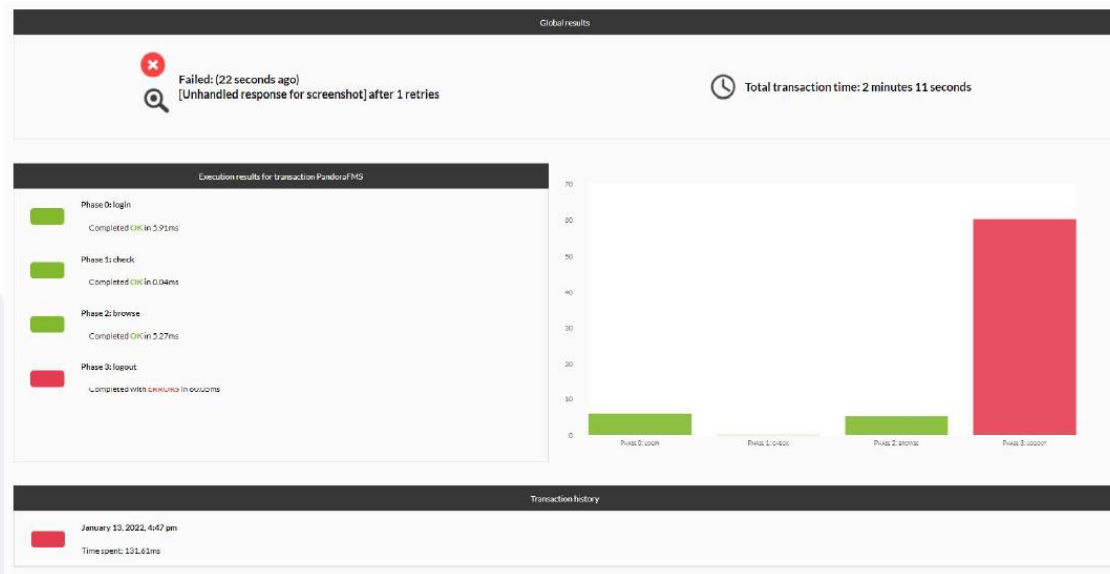


# User experience monitoring



Why wait till your client complains?

UX monitoring reproduces your customers' experience on web apps, giving you valuable insight into what works and what could be improved.



# USER EXPERIENCE Monitoring

## Record Transactions



Play it over the network in any location. Grab screenshots when probe fails and generate alerts.

The screenshot displays the Pandora FMS web interface. A modal window is open, advertising a trial offer. The background shows a 'List of modules' table with columns for Status, Thresholds, Data, Graphs, and Last contact.

**Pandora FMS Enterprise Trial**

Pandora FMS is the perfect monitoring suite for demanding orgs that value professional support, steady updates and, above all, a product, with out-of-the-box solutions and large environment m. In addition, Pandora FMS gives you the flexibility to adjust your of your operations.

- ✓ Pandora FMS Enterprise: Fully functional for 30 days.
- ✓ You choose: On-premise local or Cloud installation.
- ✓ Free: We won't ask for your credit card.

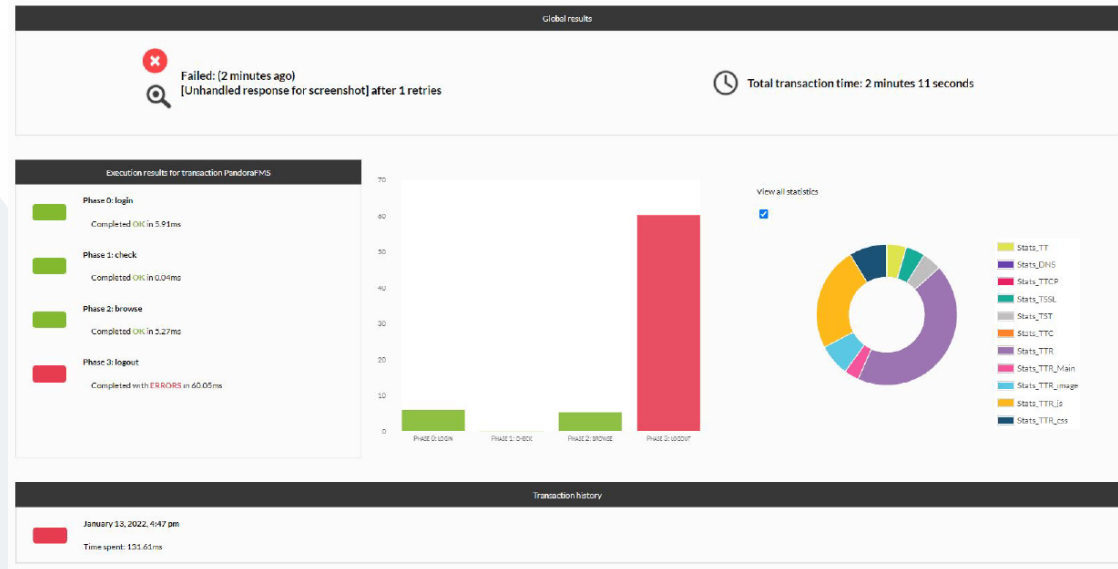
Module	Status	Thresholds	Data	Graphs	Last contact
...	Red	0			2024-02-01
...	Green	N/A - N/A			2024-02-01
...	Red	N/A - N/A	0		2024-02-01
...	Green	N/A - N/A	2.6		2024-02-01
...	Green	N/A - N/A	4		2024-02-01
...	Green	N/A - N/A	1.807		2024-02-01
...	Green	N/A - N/A	1.664		2024-02-01
...	Green	N/A - N/A	1.664		2024-02-01
...	Green	N/A - N/A	0		2024-02-01
...	Green	N/A - N/A	3		2024-02-01
...	Green	N/A - N/A	20,842		2024-02-01
...	Green	N/A - N/A	2,779		2024-02-01
...	Green	N/A - N/A	2,046		2024-02-01
...	Green	N/A - N/A	8,318		2024-02-01
...	Green	N/A - N/A	1,699		2024-02-01

# USER EXPERIENCE Monitoring

## Measure Everything



Response times.  
Resource usage.  
Lagging response. Step  
by Step.





# Low-Cost Distributed Monitoring



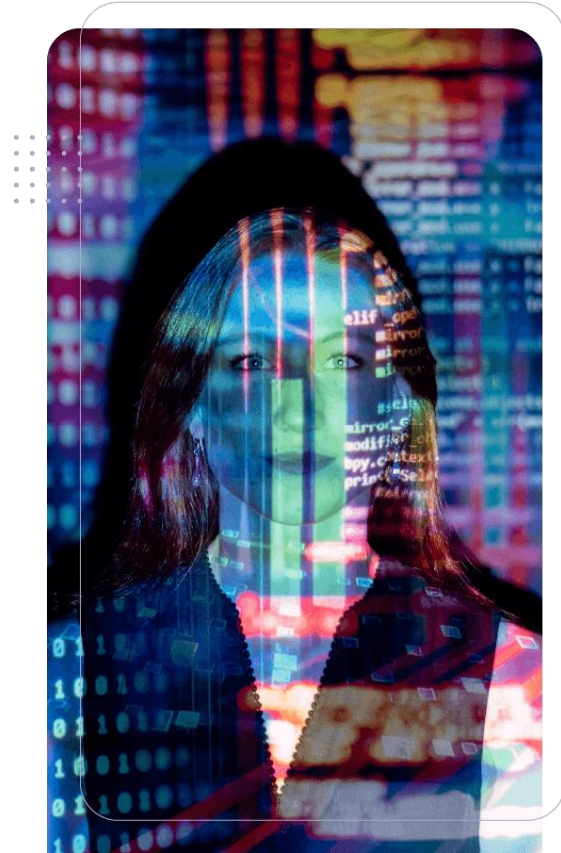
## Make sure your customers' experience is excellent

Poor performance of critical user flows makes the entire user experience a failure. Monitor overall performance and each step separately. Get SLA reports, real-time alerts, and even a screenshot of the page that is faulty.

Gather the information from multiple locations, using the customer network.

## Low-cost distributed monitoring

Use our Raspberry-based IoT sensors to distribute a network of monitoring sensors anywhere in your network at an extremely low cost.



**APPLICATION**  
Performance Monitoring



# Performance Monitoring

We have hundreds of enterprise plugins for the leading established technologies, and for most of the newly emerging ones too. Check out [pandorafms.com/library](http://pandorafms.com/library)



# Discover Effortless Monitoring



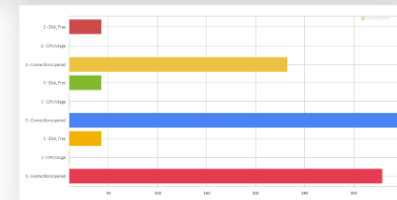
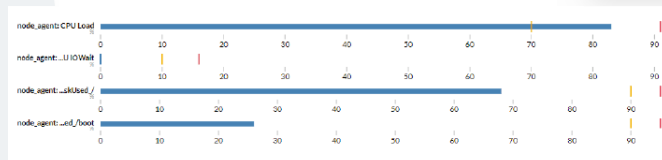
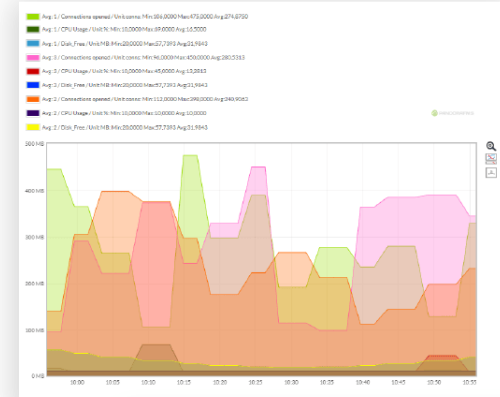
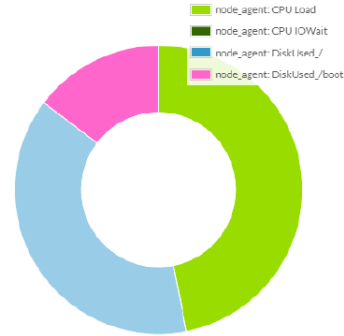
Wizards for centralized monitoring in major technologies



# Generate your own graphs



Pandora FMS can draw any data in any format: area and plot with zooming, histogram, bars and pie charts. Add them to a report, send it to your customers. Customize with your logo, add series and everything with real-time data. With our long-term database storage. Up to 3 years of data for any piece of data you collect. Available for reports & graphs.



# Get the Data from the Source



Each application has its own metrics. Since the % of fragmentation of a table of an Oracle database is not the same as the number of concurrent users in SAP.

Proactively monitor your business applications and help ensure that your critical applications meet end user expectations.

Unify the monitoring of your applications regardless of them being are in physical infrastructures, SaaS, PaaS or IaaS.



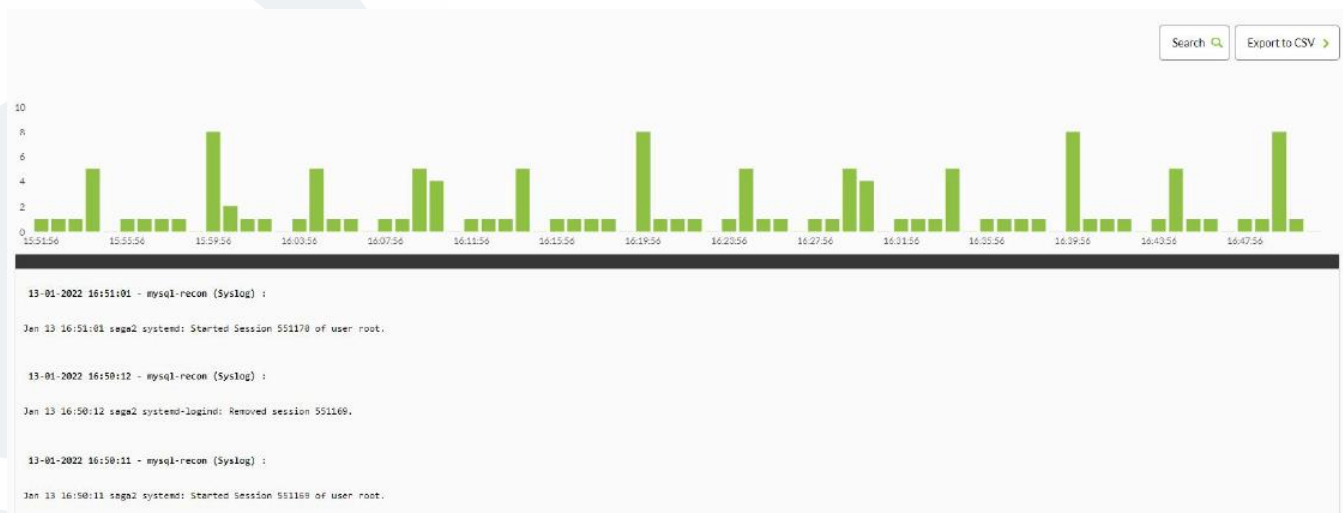
**LOG COLLECTION**  
and alerting



# Get Logs



From any source. Any location. Any format.  
Any size. Grab Windows system events,  
text logs, syslog, etc. Search on our custom  
Elastic: dates, strings and source.





# Get Logs



There are very powerful tools to collect and analyze logs, although installing agents or configuring the forwarding of such logs are tedious tasks. **If you already have a Pandora FMS agent installed in those machines, why not also collect logs?**



# LOG COLLECTION and alerting

## Grab Data from LOGS



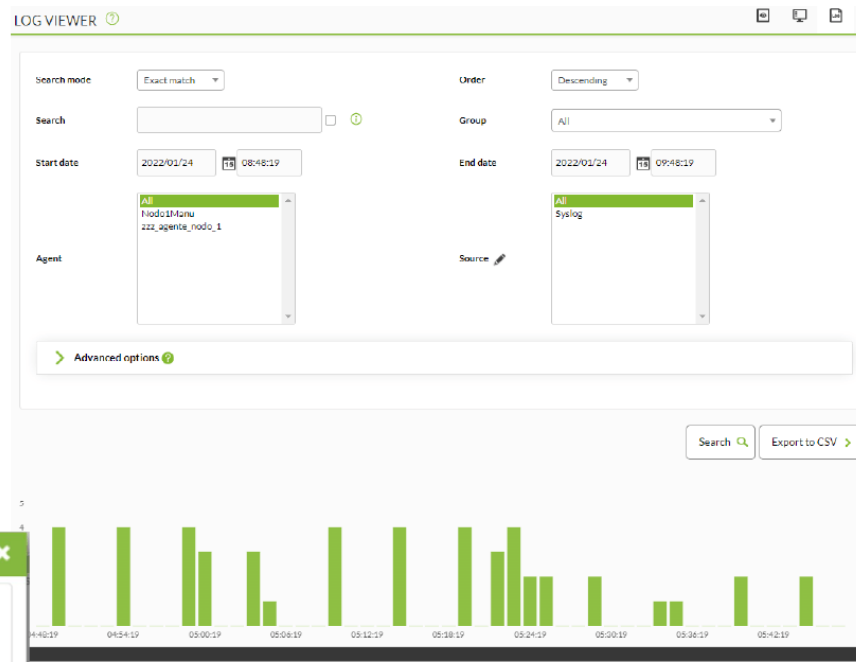
Use regexp to generate data modules from raw data. Forget templating, XML, modelling, topology and other complexities.

### Edit capture model

Title:

Capture regexp:

Fields:   ⓘ



# Generate alerts from Expressions

### Available items

Block: ( )

Fields:

- Log content
- Log source
- Log agent
- Event content
- Event user comment
- Event agent
- Event module
- Event module alerts
- Event group
- Event group (recursive)
- Event severity
- Event tag
- Event user
- Event type

Operators:

- greater than
- less than
- greater or equal than
- less or equal than
- is equal
- is different
- is like (regex)
- is not like (regex)

Modifiers:

- within an interval (seconds)
- repeated at least

News:

- AND
- NAND
- OR
- NOR
- XOR
- NXOR

### Rule definition

Remove rule

Remove item

Cleanup

Reset

### Available items

Block: ( )

Fields:

- Log content
- Log source
- Log agent
- Event content
- Event user comment
- Event agent
- Event module
- Event module alerts
- Event group
- Event group (recursive)
- Event severity
- Event tag
- Event user
- Event type

Operators:

- greater than
- less than
- greater or equal than
- less or equal than
- is equal
- is different
- is like (regex)
- is not like (regex)

Modifiers:

- within an interval (seconds)
- repeated at least

News:

- AND
- NAND
- OR
- NOR
- XOR
- NXOR

### Rule definition

( Event group is equal Applications )

AND ( Event module is like (regex) Host )

Remove rule

Remove item

Cleanup

Reset

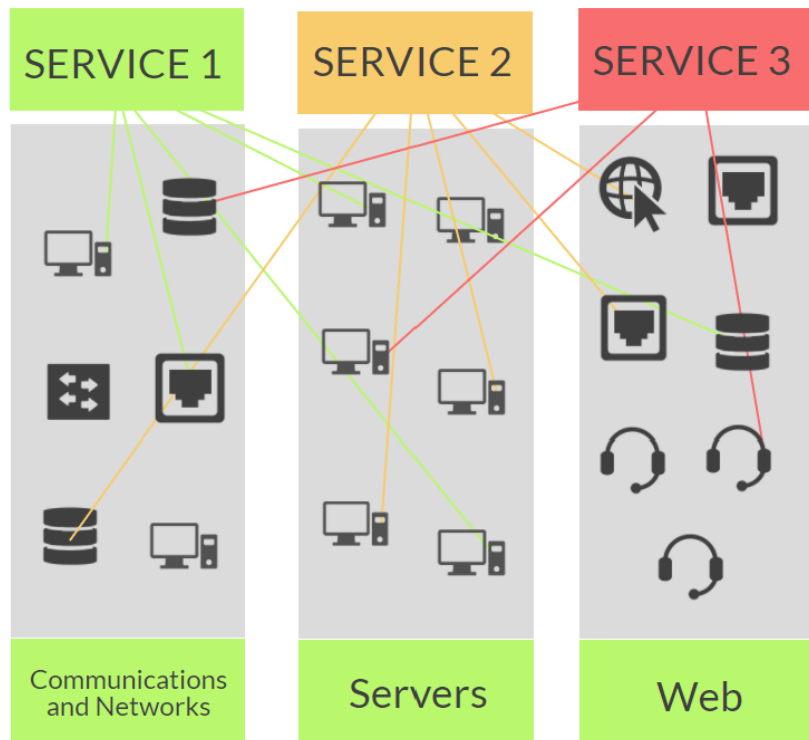
**SERVICES**  
Monitoring



# Bridge Between it and Business

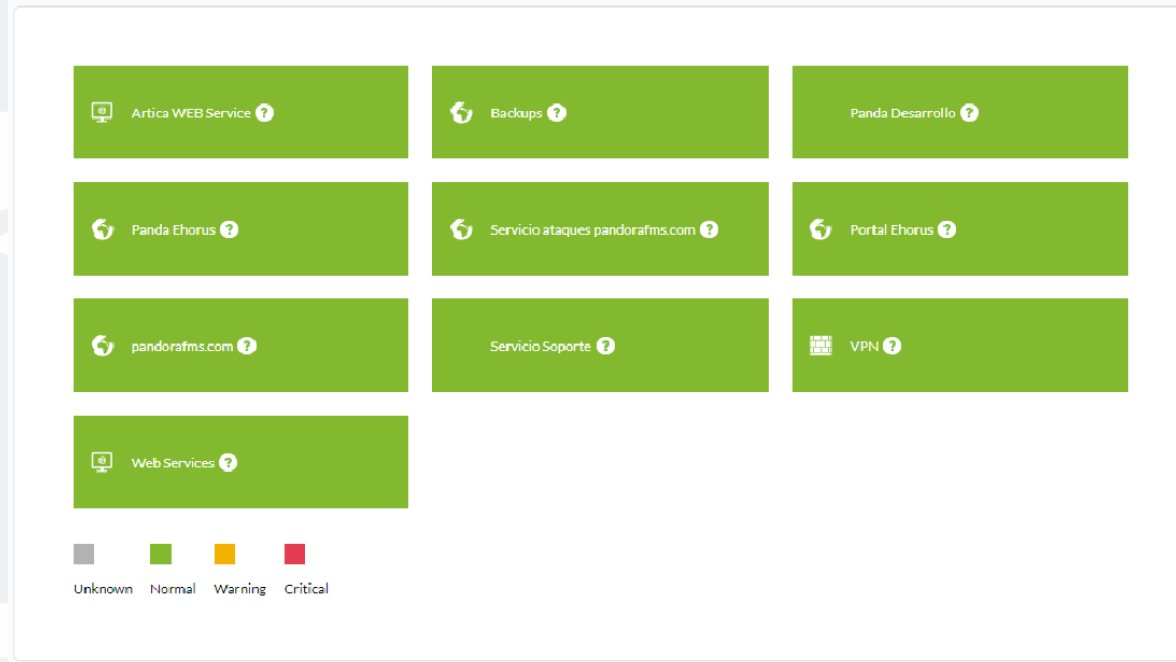
**Prioritize tasks:** Identify the critical components of each service to establish the priority of tasks for your operations team.

**Make information easy to understand:** Make it easy for your business department to understand the technology that supports the service.



# Bridge Between it and Business

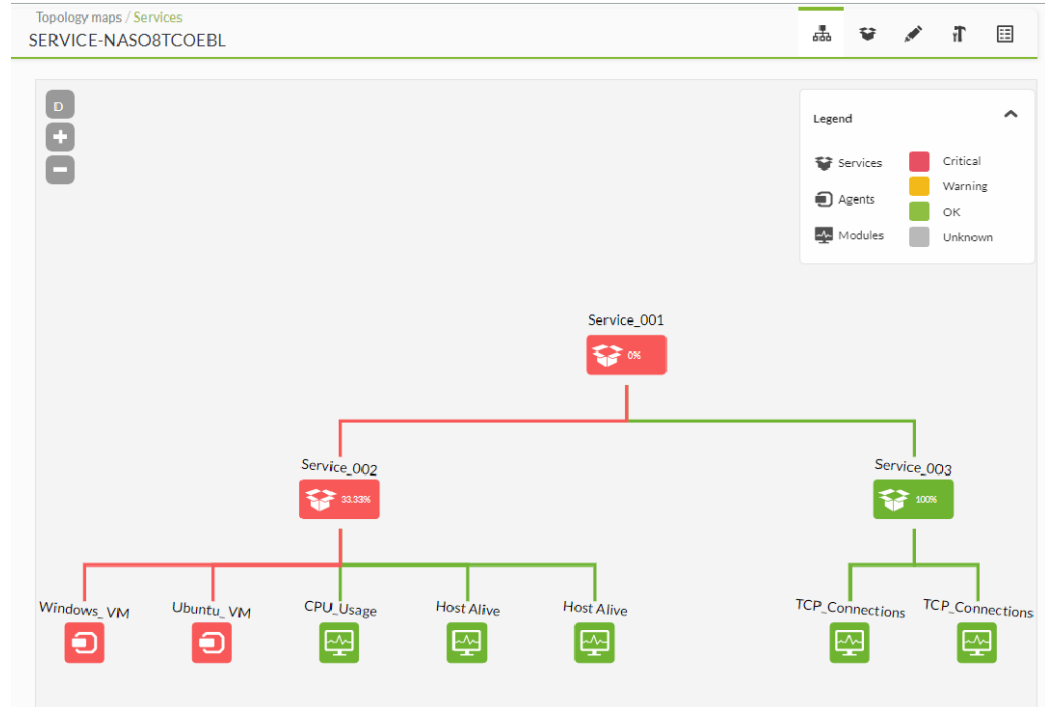
Watch your services, not the  
thousand pieces of data you have.



# Bridge Between it and Business

Perform a Root cause analysis.  
Use manual or automatic weighting to evaluate loss of service.

Evaluate SLA % in realtime,  
with long-term historical data.  
Determine the fault path from  
bottom to top.



**CLOUD**  
Monitoring





# Put Everything Together



Unify on-premise, SaaS, IaaS and PaaS in the same dashboard.

A screenshot of the Pandora FMS web interface. The top navigation bar includes the Pandora FMS logo, the text 'Pandora FMS the Flexible Monitoring System', a search bar, and several utility icons. A left-hand sidebar menu lists various monitoring functions: Monitoring, Topology maps, Reporting, Events, Workspace, Tools, Discovery (highlighted), Resources, and Profiles. The main content area is titled 'Discovery / Cloud CLOUD' and features three prominent cloud provider logos: Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform. At the bottom of the dashboard, there is a footer with the text 'Pandora FMS v7.0NG.755 - OUM 754 - MR 46' and 'Page generated on 2021-06-17 15:52:42'. A disclaimer at the bottom of the main content area reads: '\*All company names used here are for identification purposes only. Use of these names, logos, and brands does not imply endorsement'.

# Put Everything Together

## EC2, RDS and S3

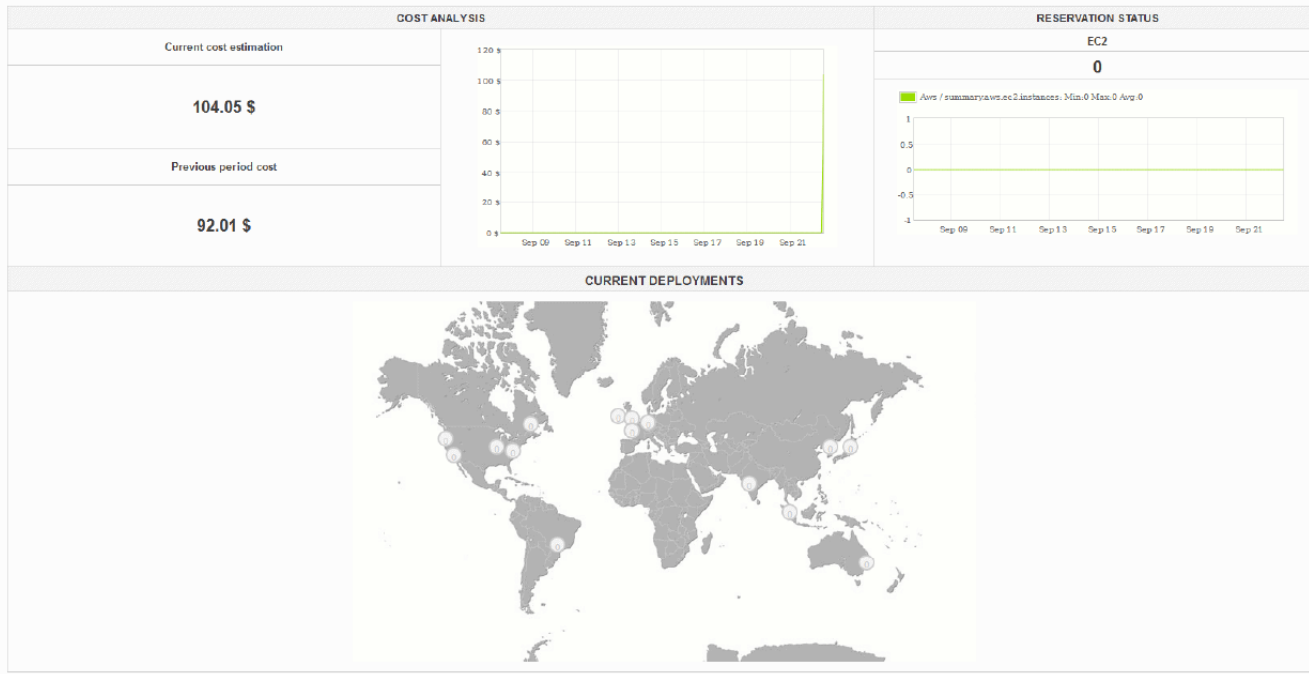
Discovery / Cloud / Amazon Web Services (AWS) / Recon / Costs / General / Instances / Other

### NETSCAN

Discovery task name	<input type="text" value="AWS"/>
Discovery server	<input type="text" value="pandorafms"/>
<span>✓</span> Tentacle options <span>ⓘ</span>	
IP	<input type="text" value="127.0.0.1"/>
Port	<input type="text" value="41121"/>
Extra options	<input type="text"/>
Group	<input type="text" value="Please select..."/>
Interval	<input type="text" value="1 hour"/>

## EC2, RDS and S3

AWS View (AWS) ⓘ



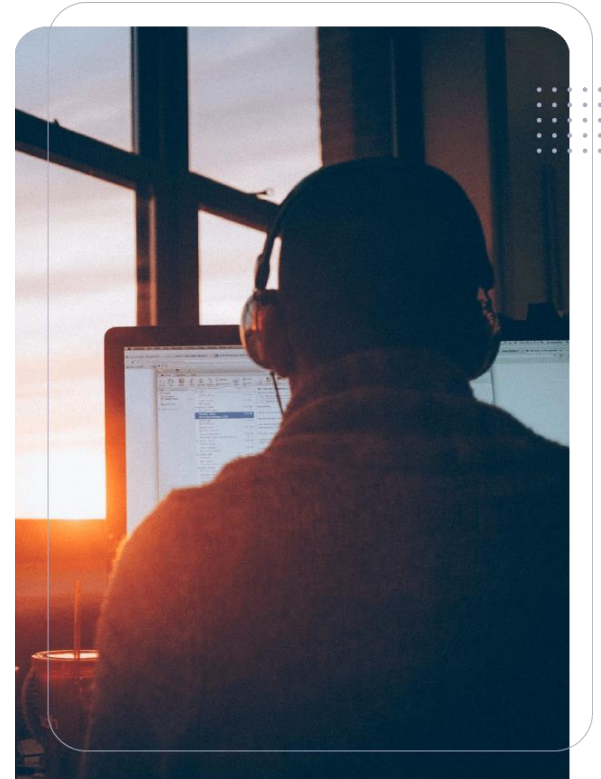
**INVENTORY**



# Collect Inventory Data

Obtain information from your systems: with software agents or **remotely**. Expand the capabilities to include custom information with your own.

- Firmware version
- Applications installed in the computer
- Serial numbers and licenses
- System users
- Services in progress.
- Network shares
- Storage and filesystems
- Network adapters
- Processor model
- RAM modules
- Installed routes
- Printers Scheduled tasks



INVENTORY

# Inventory Alerts



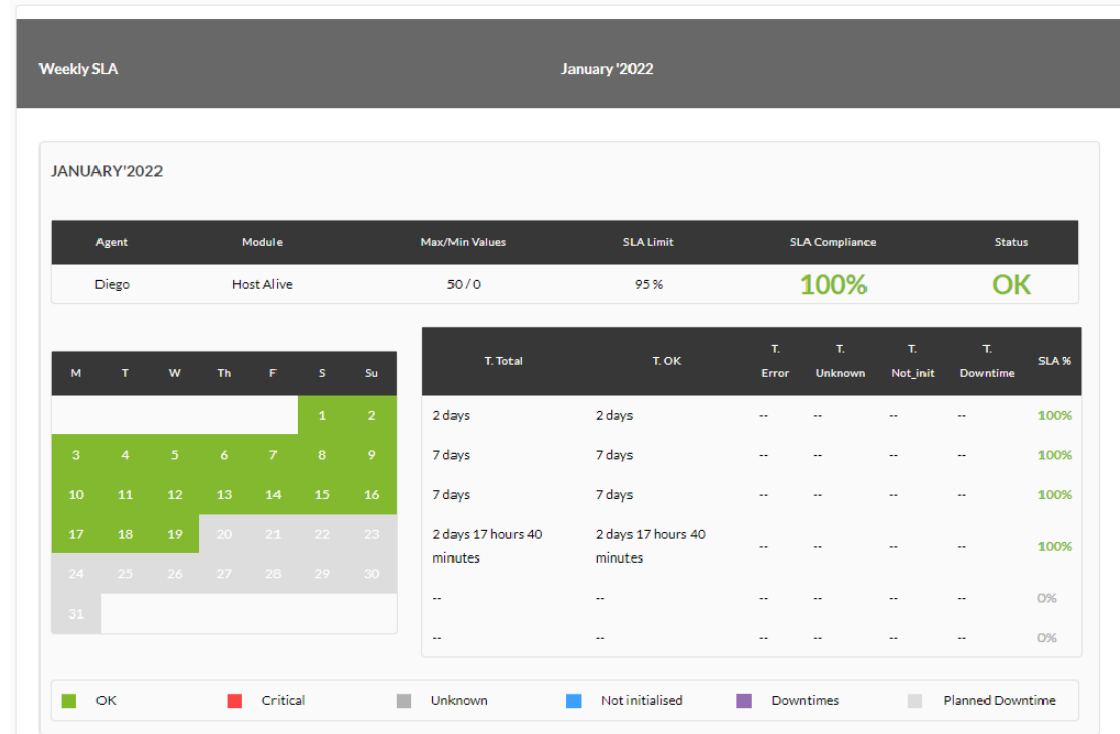
Notify administrators when someone installs forbidden software. Something change? Launch a warning.

Something missing? Oh, wait. There could be a problem. Text me!



# Inventory Alerts

- Need to have all your assets listed?
- Need a report for ISO 27001?
- Need a report for a customer who asks for data?
- Reports of IP / Subnet / Supernet usage (IPAM)



**NCM**

Network Configuration Management

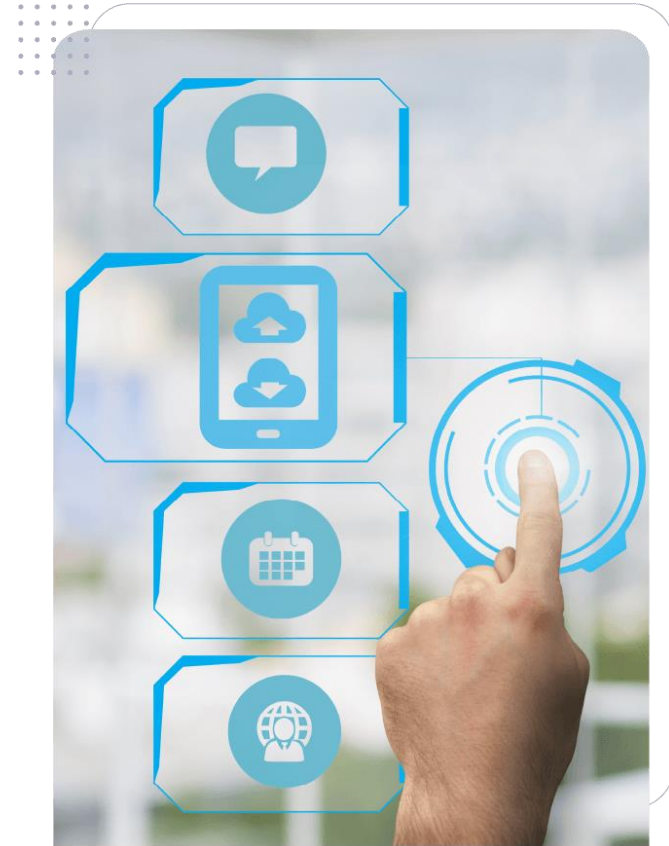




# Network Device Management

Centralized management of all your network devices configured using TELNET / SSH (Cisco, Juniper, Sonicwall, etc)

- Configuration backup & restore.
- Firmware management.
- Custom script execution.
- Detect configuration changes.
- Scheduled backup.
- Bulk configuration push on remote devices.



# Network Device Management



NCM state

Device manufacturer i

Device model i

Connection method

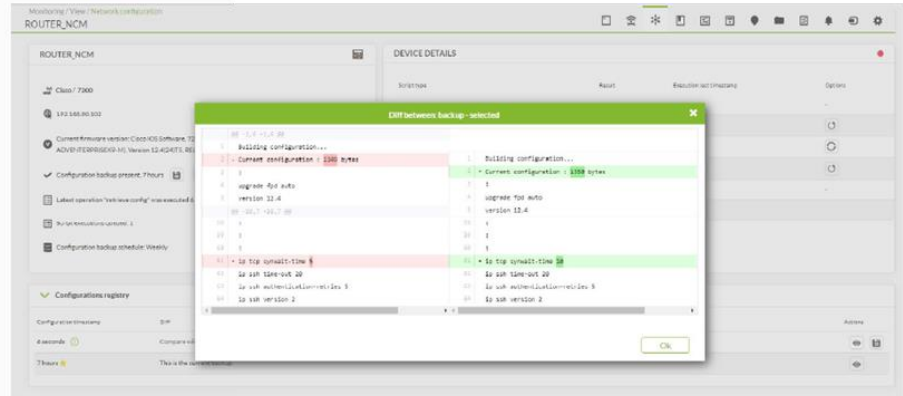
Port

Credentials to access device

Credentials to administrate device

NCM template to be used

Backup schedule (if defined)   i



**REMOTE CONTROL**  
with eHorus



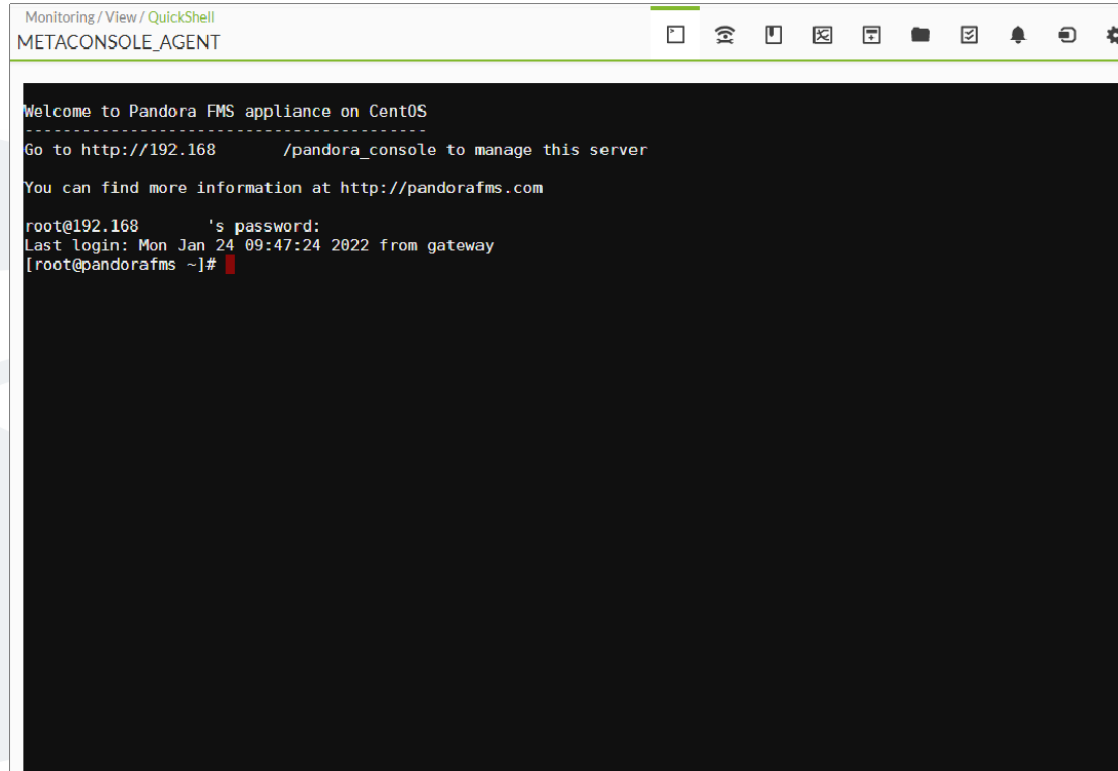
# Remote Control

Totally manage and control any Windows Server or Workstation as well as Linux hosts (Redhat, Debian, etc).

- Remote desktop UI.
- Remote shell (Administrator / root).
- Process & Service control.
- On-premise or Cloud servers.
- Bi-directional file transfer.
- 100% Browser/HTML/JavaScript.
- No app needed.



# Workstation Remote Control

A screenshot of a terminal window titled 'Monitoring/View/QuickShell' with the address bar showing 'METACONSOLE\_AGENT'. The terminal content is as follows:

```
Monitoring/View/QuickShell
METACONSOLE_AGENT

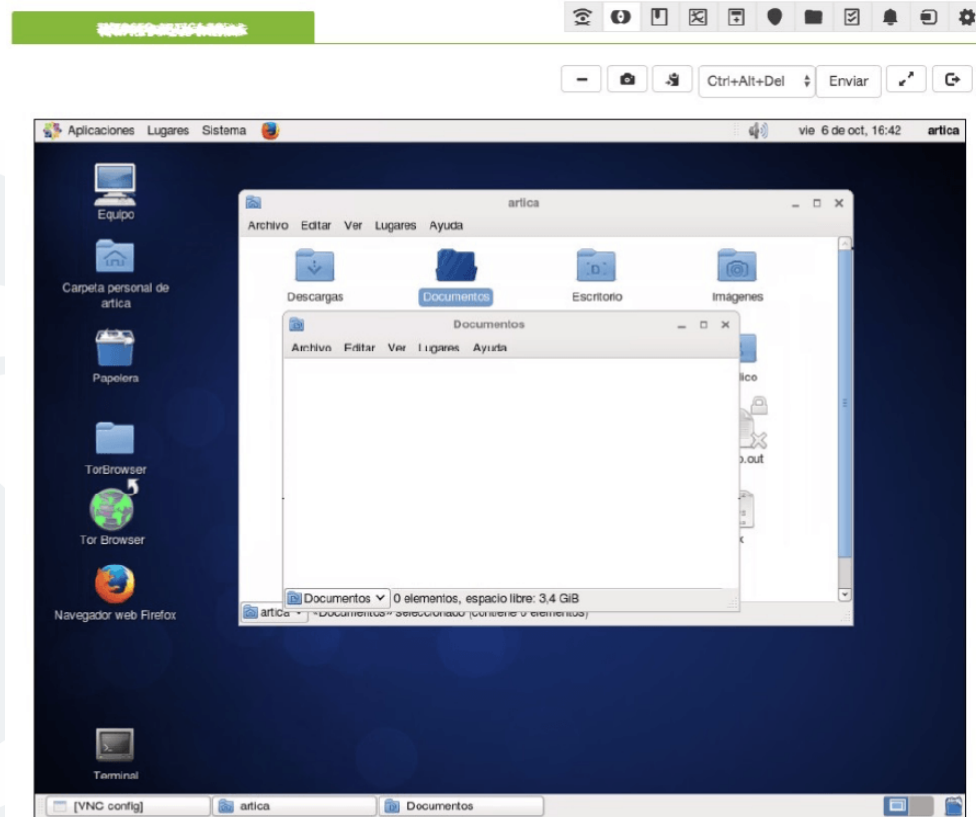
Welcome to Pandora FMS appliance on CentOS
-----
Go to http://192.168.1.100/pandora_console to manage this server

You can find more information at http://pandorafms.com

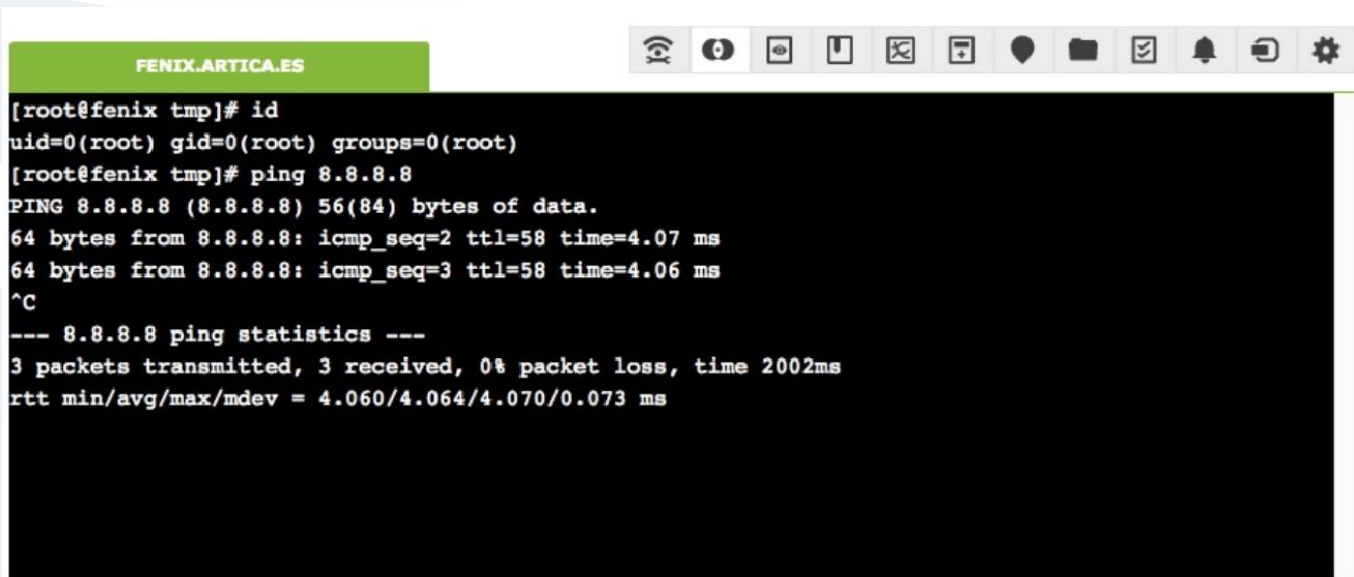
root@192.168.1.100's password:
Last login: Mon Jan 24 09:47:24 2022 from gateway
[root@pandorafms ~]#
```

# REMOTE CONTROL with eHorus

## Linux Remote UI



## Windows & Linux .



```
[root@fenix tmp]# id
uid=0(root) gid=0(root) groups=0(root)
[root@fenix tmp]# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=2 ttl=58 time=4.07 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=58 time=4.06 ms
^C
--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/avg/max/mdev = 4.060/4.064/4.070/0.073 ms
```

# REPORTING

& Dashboard





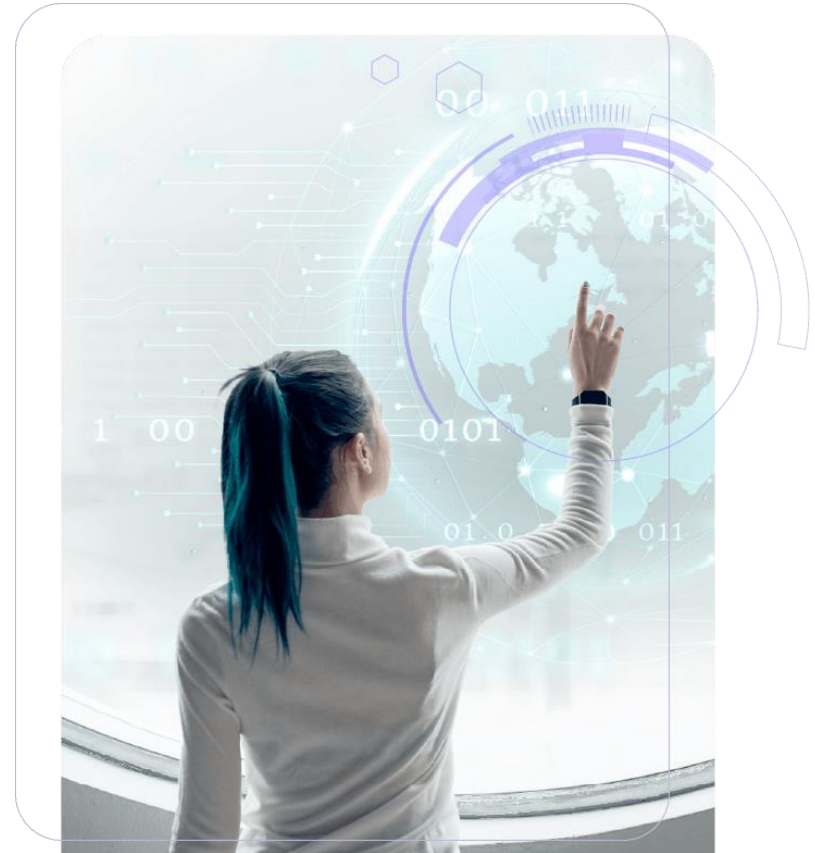
# Integrated Reports



More than 40 report items: Top-N, graphs, histograms, SLA (monthly, weekly, daily, hourly), capacity planning, downtime and availability, Average/Max/Min, listing, events, alerts, configuration, specific Netflow, IP Usage (IPAM) and many more.

- 100% editable using UI.
- Template system for PDF customization.
- Scheduling and email sent to individual users.
- Long-term data (more than 3 years\*).
- HTML reports have dynamic graphs (with zooming).
- Template system to let users make their own simplified reports.

*\* Taking into account that there is an historical database installed*

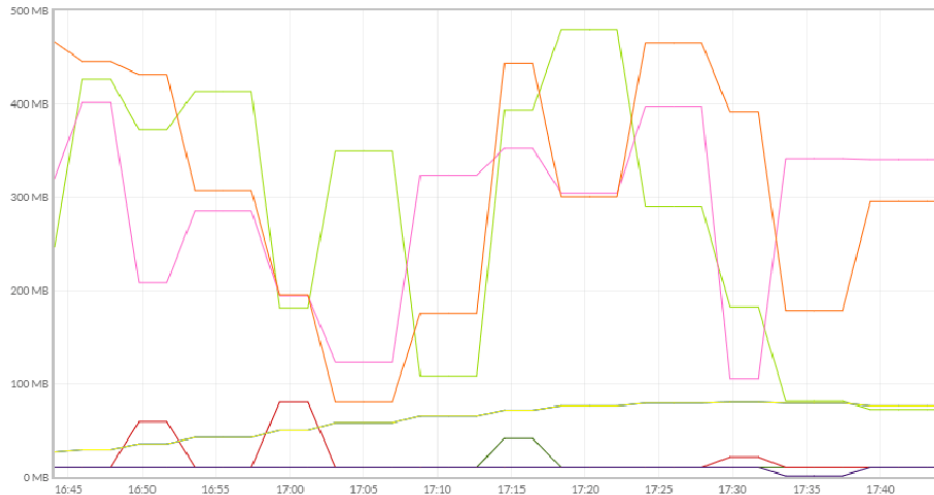


# Custom Graph Engine



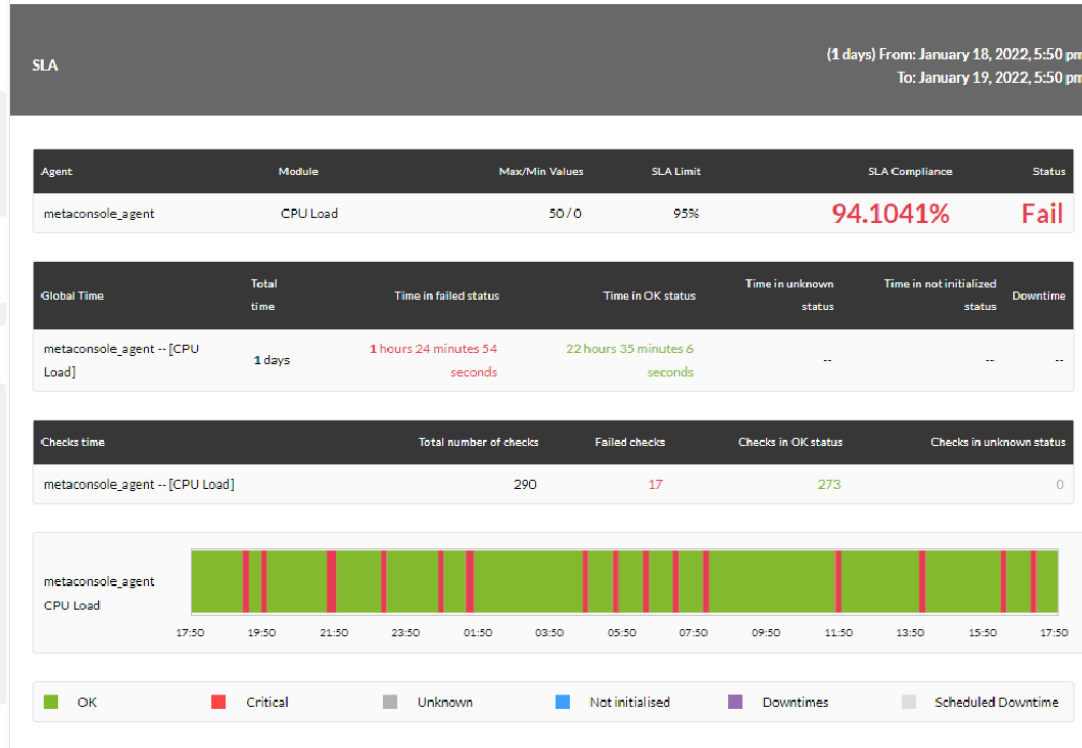
- Avg: 1 / Connections opened / Unit conns: Min:72,0000 Max:479,0000 Avg:272,8125
- Avg: 1 / CPU Usage / Unit %: Min:10,0000 Max:41,0000 Avg:11,9375
- Avg: 1 / Disk\_Free / Unit MB: Min:26,4188 Max:80,0000 Avg:61,9261
- Avg: 3 / Connections opened / Unit conns: Min:105,0000 Max:401,0000 Avg:284,8281
- Avg: 3 / CPU Usage / Unit %: Min:10,0000 Max:80,0000 Avg:18,1250
- Avg: 3 / Disk\_Free / Unit MB: Min:26,4188 Max:80,0000 Avg:61,9261
- Avg: 2 / Connections opened / Unit conns: Min:80,0000 Max:466,0000 Avg:302,3750
- Avg: 2 / CPU Usage / Unit %: Min:1,0000 Max:10,0000 Avg:9,1563
- Avg: 2 / Disk\_Free / Unit MB: Min:26,4188 Max:80,0000 Avg:61,9261

PANDORAFMS



# REPORTING & Dashboard

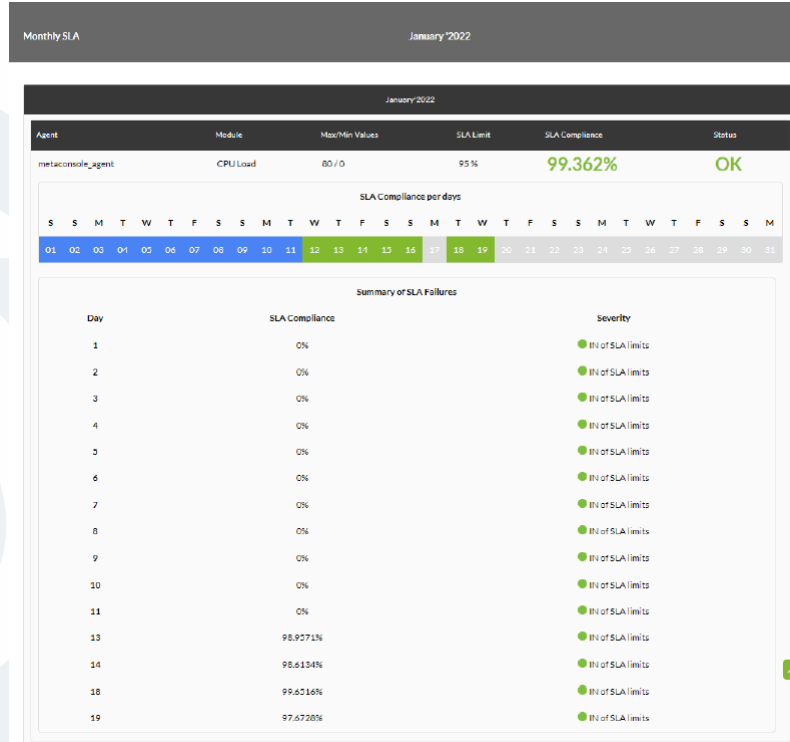
## Customized PDF Reports



# Real time GIS Mapping View

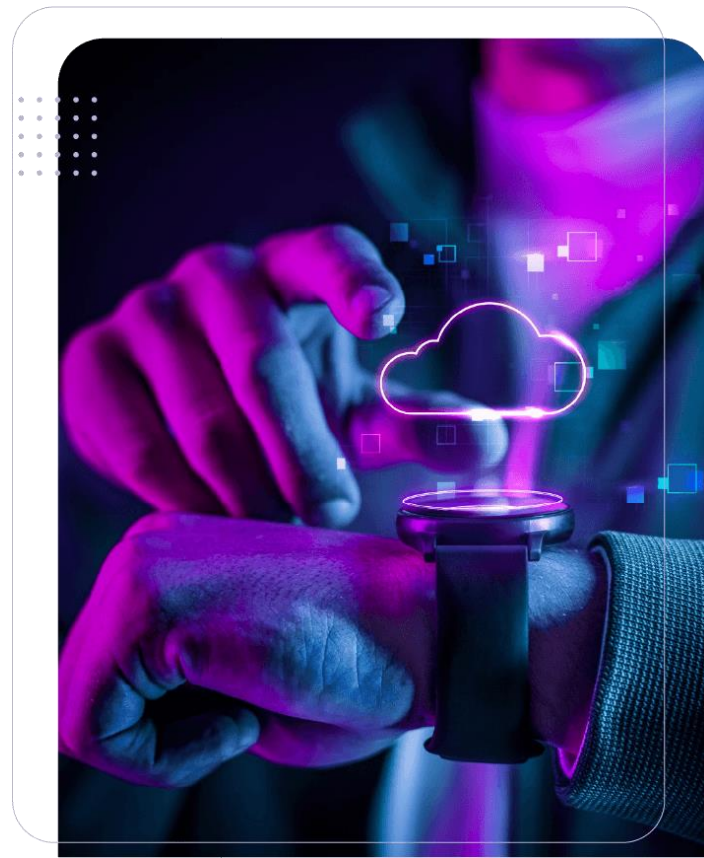


Monitored GIS data is shown in realtime.



# Visual Consoles

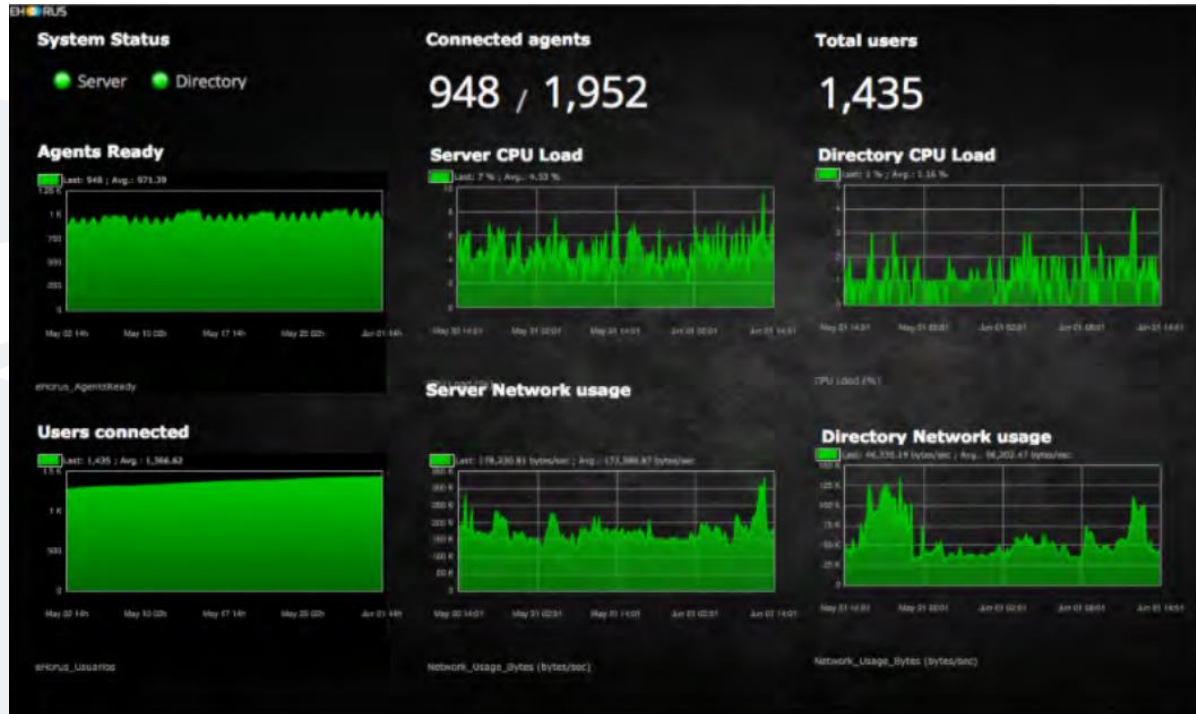
- Custom screens created with the UI
- Linked screens to render service views
- Perfect to share data with everyone in a public screen or an open URL
- Rotation scheduling to show different screens automatically
- Data are refreshed in real time
- Clickable screens
- Can contain icons, numeric data, graphs, histograms, heat map, gauges, clocks and static graphs
- Dashboard adapts to any screen size to adjust in fullscreen



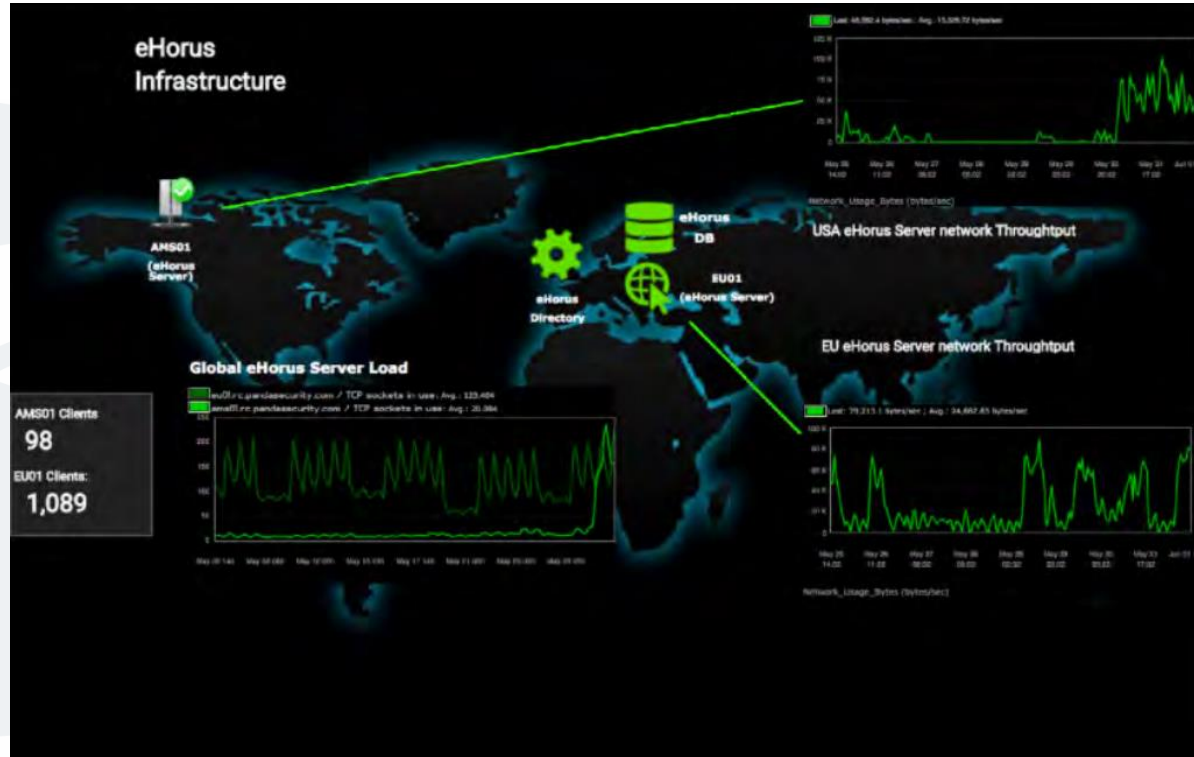
# Custom Screens (Visual Consoles)



# Custom Screens (Visual Consoles)

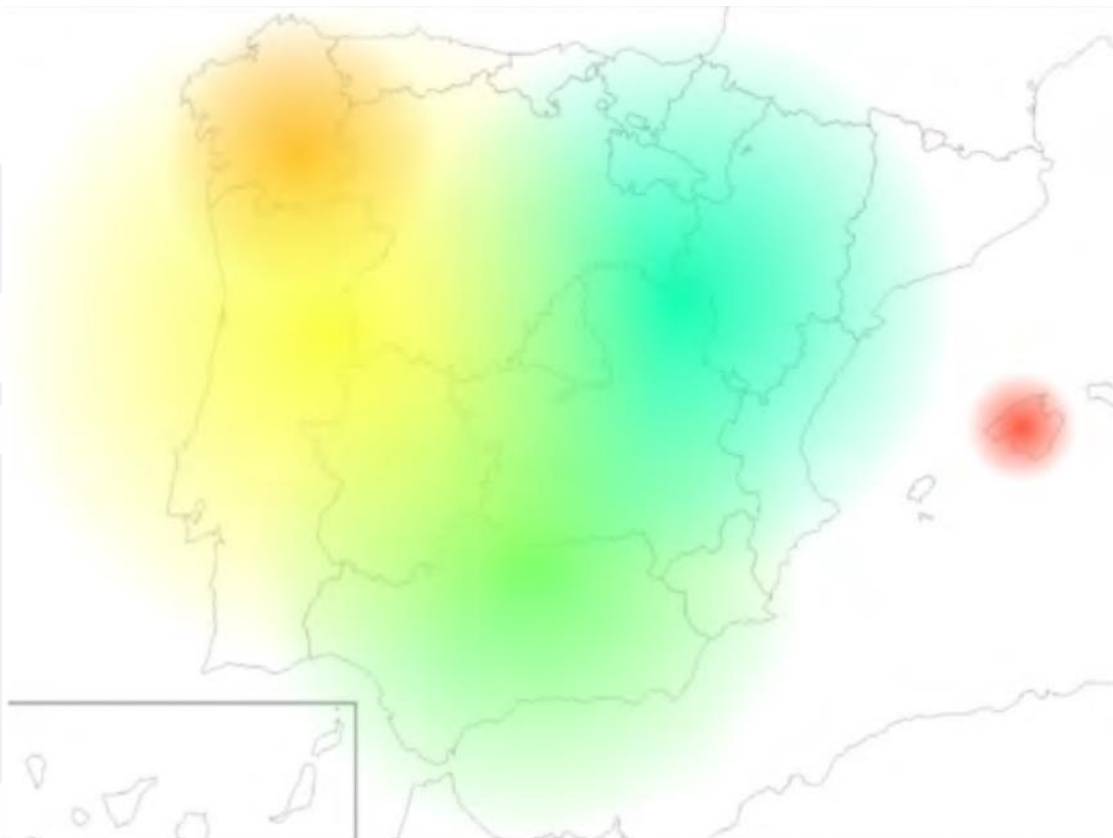


# Custom Screens (Visual Consoles)





# Heat Map



# Dashboard Screens

- Dashboards are created with the UI
- Each user can have his own dashboard(s)
- Clickable items, browsable
- Public screens to expose information open to the public
- Data are refreshed in realtime.



# REPORTING & Dashboard

## Custom Dashboard



# REPORTING & Dashboard

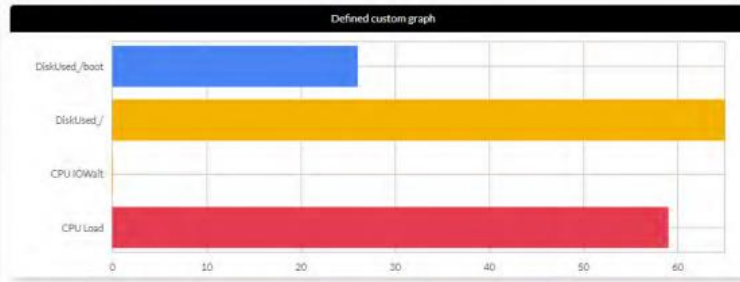
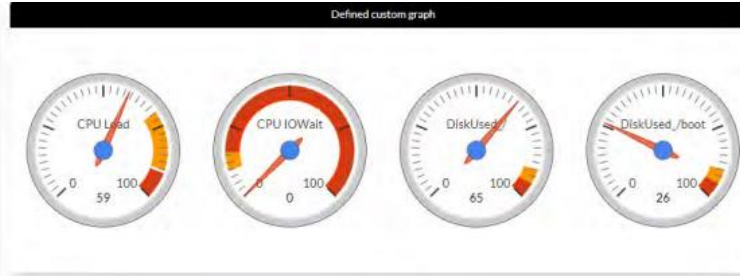
## Custom Dashboard



Tree view

Groups found: 3

- Applications [3:2:1]
- Servers [259:1:79:25:7:148]
  - 1 [11:11]
  - 10 [15:2:13]
  - 100 [11:11]
  - 101 [11:11]
  - 102 [11:1:10]
  - 103 [11:11]
  - 104 [11:1:10]
  - 105 [11:11]
  - 106 [11:11]
  - 107 [11:11]
  - 108 [11:11]
  - 109 [11:11]
  - 11 [17:4:13]
  - 110 [11:2:9]
  - 111 [11:11]
  - 112 [11:11]
  - 113 [11:1:10]
  - 114 [11:1:10]
  - 115 [11:1:10]
  - 116 [11:1:10]
  - 117 [11:11]
  - 118 [11:11]
  - 119 [11:1:10]
  - 12 [11:11]
  - 120 [11:11]
  - 121 [11:11]
  - 122 [11:11]
  - 123 [11:11]



# ITSM

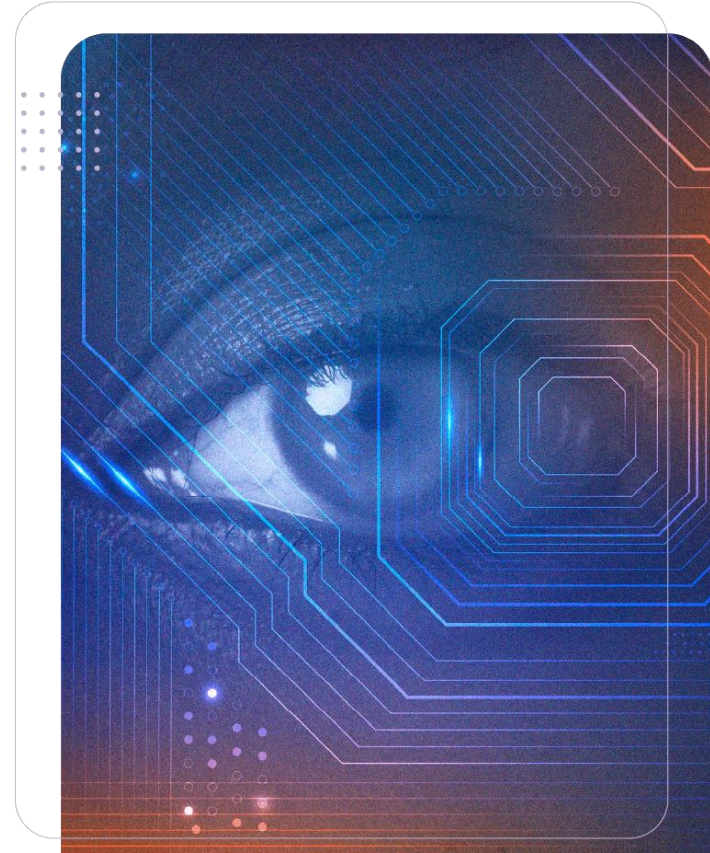
Help Desk & Support system  
with Integria IMS



# Integrated ITSM



- Create tickets as alert action
- Integrate tickets in the event workflow (on close/open)
- Integrated in the operation dashboard
- Custom ticket types with custom fields
- Custom workflows and actions
- Powerful SLA definition for each group of tickets
- External user (email) workflows
- Integrated reporting



# Integrated ITSM



INTEGRIA IMS TICKETS ⓘ

Filter

Text filter:

Status: All

Group: All

Owner: john\_wick ⓘ

Creator: ⓘ

Priority: All

Resolution: All

Date: Created from Created to

Filter Export to CSV >

Total items: 4

ID	Title	Group/Company	Status/Resolution	Priority	Updated/Started	Creator	Owner	
#13	DNS down	Engineering	Closed / Fixed	Medium	2021-02-18 14:04:53 / 2021-02-18 14:04:16	admin	john_wick	
#3	Upgrade Pandorafms agent	Engineering	Closed / Fixed	Medium	2021-02-17 11:40:53 / 2021-01-21 20:25:12	admin	john_wick	
#4	Password recovery	Engineering	Closed / Fixed	Low	2021-01-21 21:05:03 / 2021-01-21 21:04:18	admin	john_wick	
#2	Vulnerability	Engineering	Closed / Fixed	Serious	2021-01-21 19:47:44 / 2021-01-21 19:24:19	admin	john_wick	

Total items: 4

Create >

# IT AUTOMATION

With OmniShell





# IT AUTOMATION with OmniShell

## Shell Automation



- Propagate command execution among your agents
- Verify SO & Version before propagating commands
- Do prechecks to evaluate if command could be executed
- Do post-checks to evaluate execution result
- Do the operation on hundreds of systems at once
- Use file collection to propagate external commands or tools
- Automate any command execution



# IT AUTOMATION with OmniShell

## Shell Automation



OmniShell / Command definition / Select targets

### COMMAND DEFINITION ?

**Name**

**Group**

**Time out**

**Retries**

**Preconditions** ?

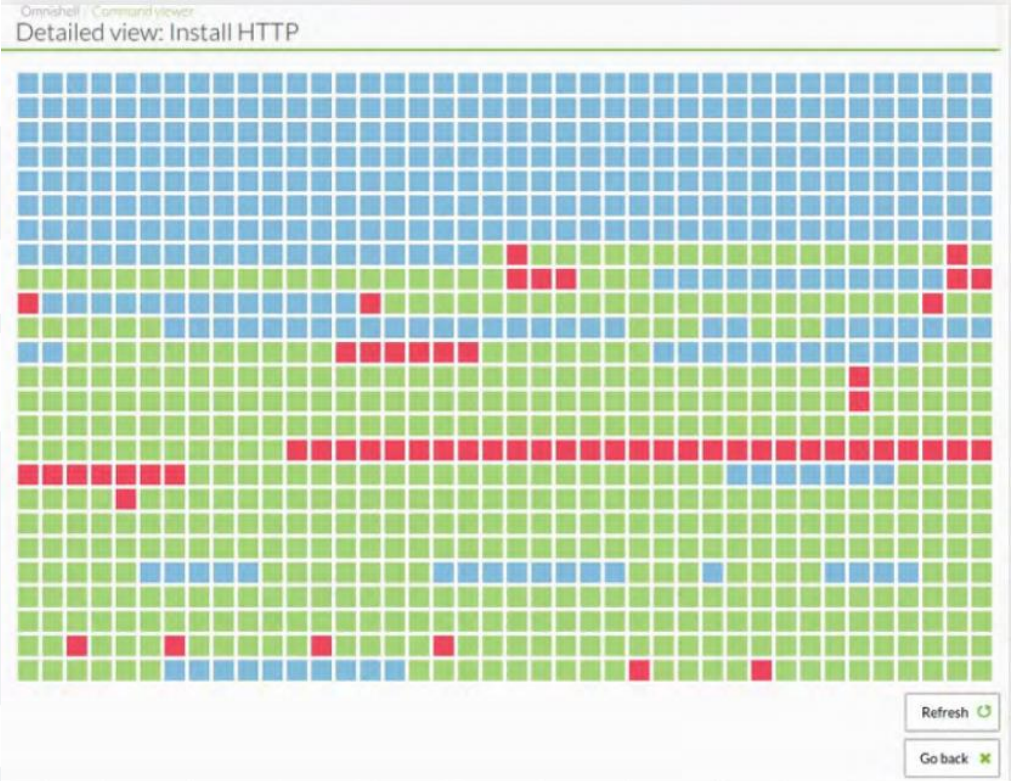
**Execute commands** ?

**Postconditions** ?

[Next >](#)

[Go back ✕](#)

# Shell Automation



**SAP**



# SAP Certified by SAP



Developed by experts with more than a decade of experience in BASIS and XI / PI.

The SAP agent can monitor HANA, SAP R/3, S/4, CRM, SRM, BI, XI / PI, WAS Netweaver environments, regardless of the database engine.



- Workprocess (SM50): DIA, BGD, UPD, UP2, SPO, ENQ.
- Pending update processes (SM13)
- Canceled Jobs (SM37)
- Faulty Idocs (WE05)
- Users logged in the system (AL08)
- Access audit (multiple)
- Lockup entries (SM12)
- Faulty batch inputs (SM37)
- Dumps (ST22)
- Database Tablespace size (DB02)
- Transactional qRFC and RFC queues (SMQ1, SM58)
- Custom SAP queries.

# Non-Intrusive Setup

It is not necessary to install anything in the SAP server,  
just use a remote SAP system user.



# SAP SAP HANA DB Monitoring



The SAP certified agent supports available space and HANA DB occupied space monitoring, for early alerting about memory space devoted to storage and its performance downgrading. We also have a specific HANA DB plugin that is used to obtain information about the server on which it is installed.

In addition to the common system metrics, DB and storage, some of the SAP Hana KPIs we monitor are the following:

- SAP Hana read/write bandwidth usage
- SAP Hana CPU time
- SAP Hana services health
- SAP Hana transactions blocked
- HDB Daemon (Compileserver, Scriptserver-D11, Web Dispatcher, XSEngine-DB, etc.)
- SAP Hana connection status
- SAP Hana connections active
- SAP Hana Row Store allocated size and free ratio
- SAP Hana license validity and usage
- SAP Hana Storage usage (Row store, data file, data disk)

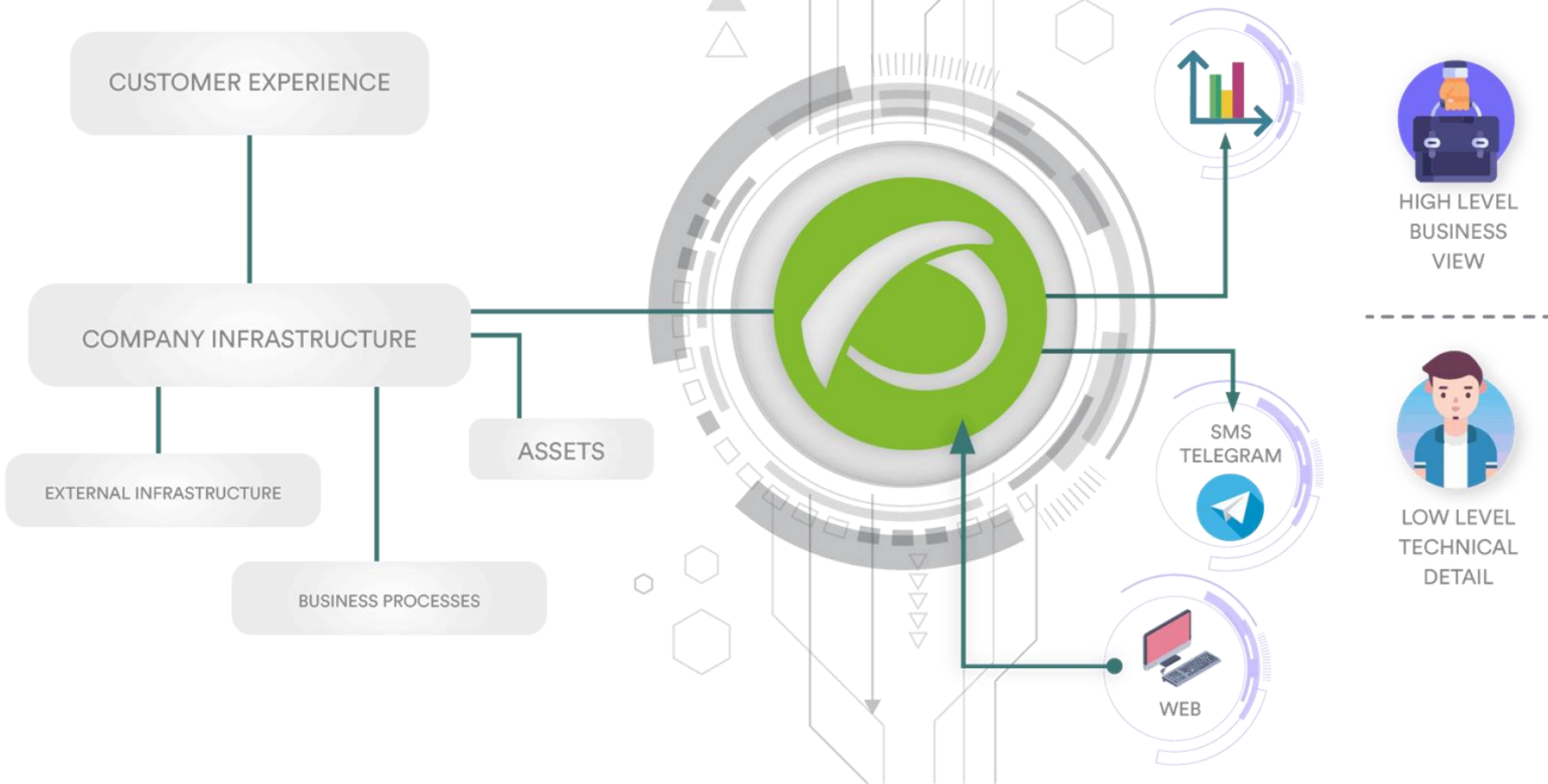


# **SERVICE AND BUSINESS TRANSACTIONS**



SERVICE AND BUSINESS TRANSACTIONS

# Business oriented monitoring

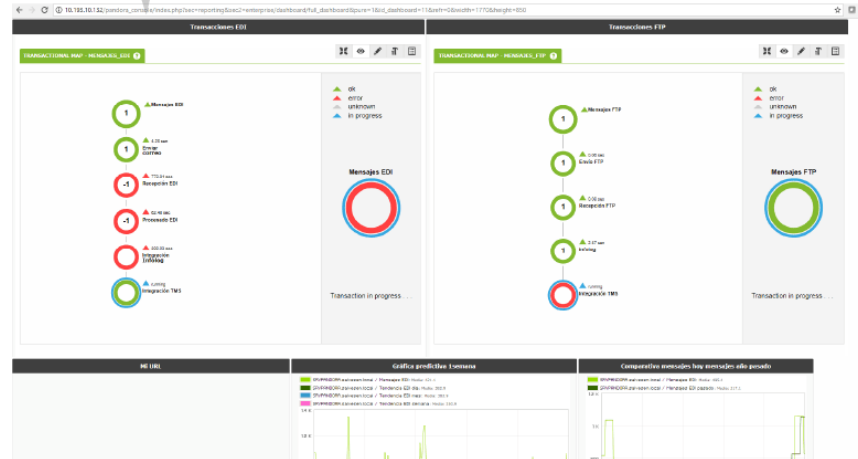
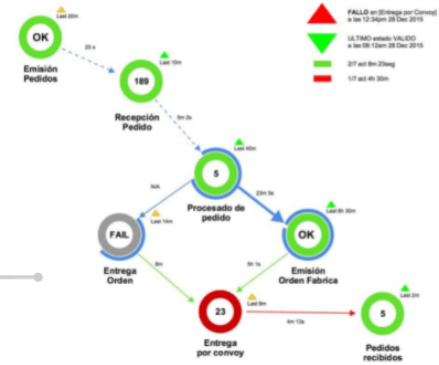


# Business-oriented PROCESS MAPS



Did the data sent from a special customer, supplier or branch arrive at its destination on time?

Did all the data arrive in the expected format? Which part of the process is taking longer than usual?



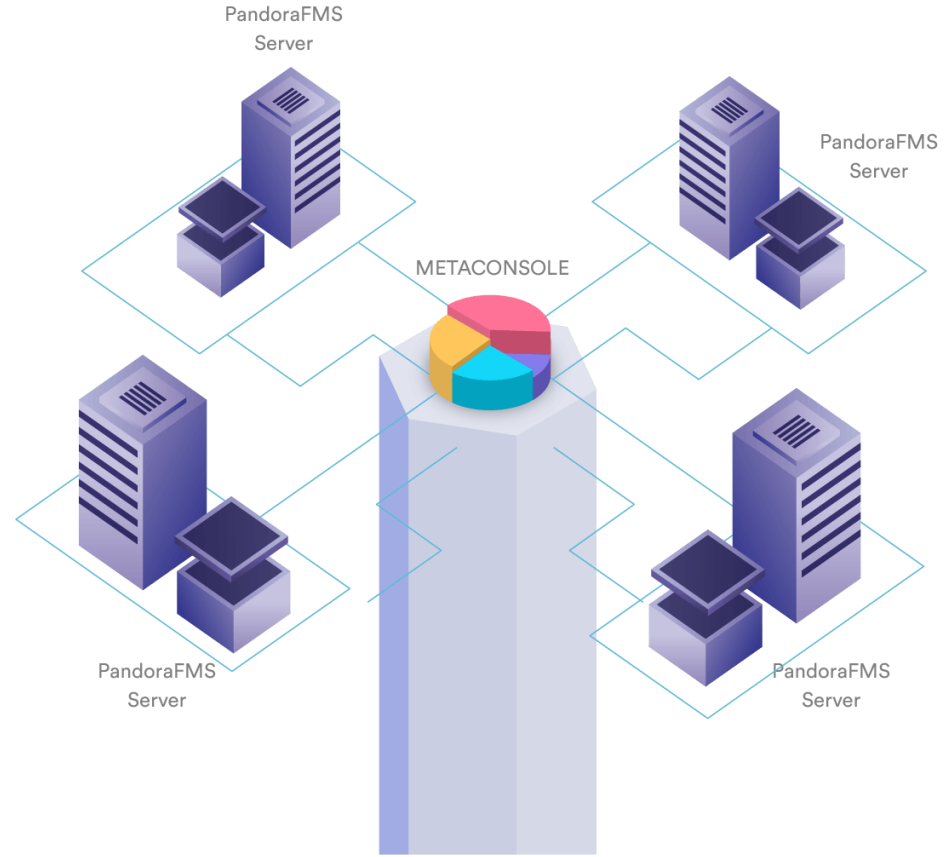
**HIGH SCALABILITY &  
CENTRALIZATION**



HIGH SCALABILITY & CENTRALIZATION

# Flexible Growth

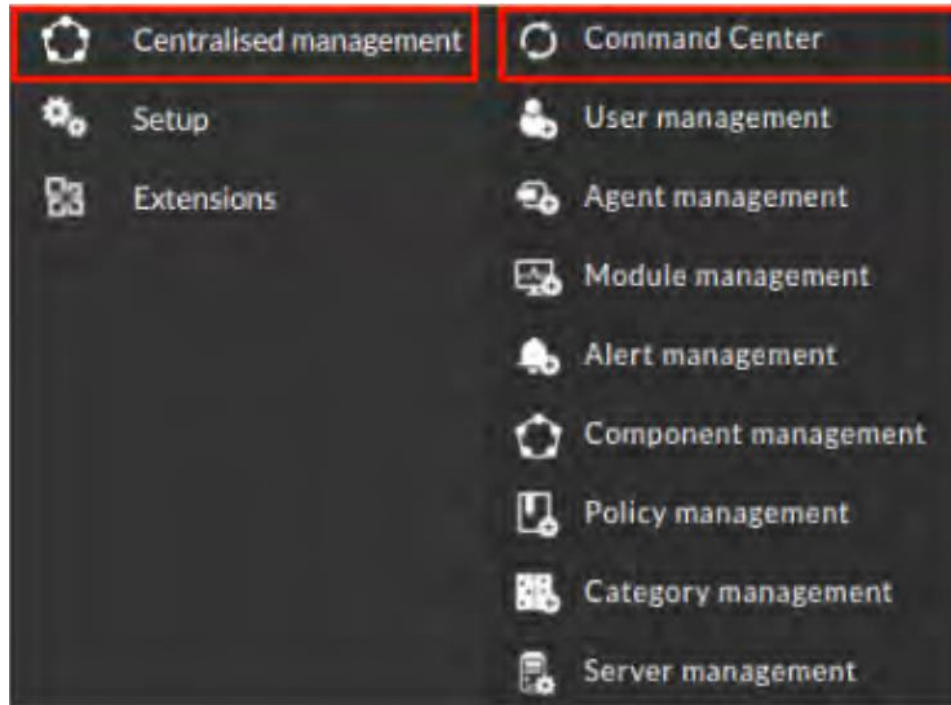
**Metaconsole:** Instead of having a big server, split the load on different setups and co-manage all of them, using a pure federated architecture. Scale at your own pace. **Unlimited growth.**



# One console to manage them all



- Command Center (Metaconsole) is used to rule all consoles under its command.
- Distribute users, configurations, and policies from a single point.
- Centralized auto-provisioning.
- Central API for integrations.

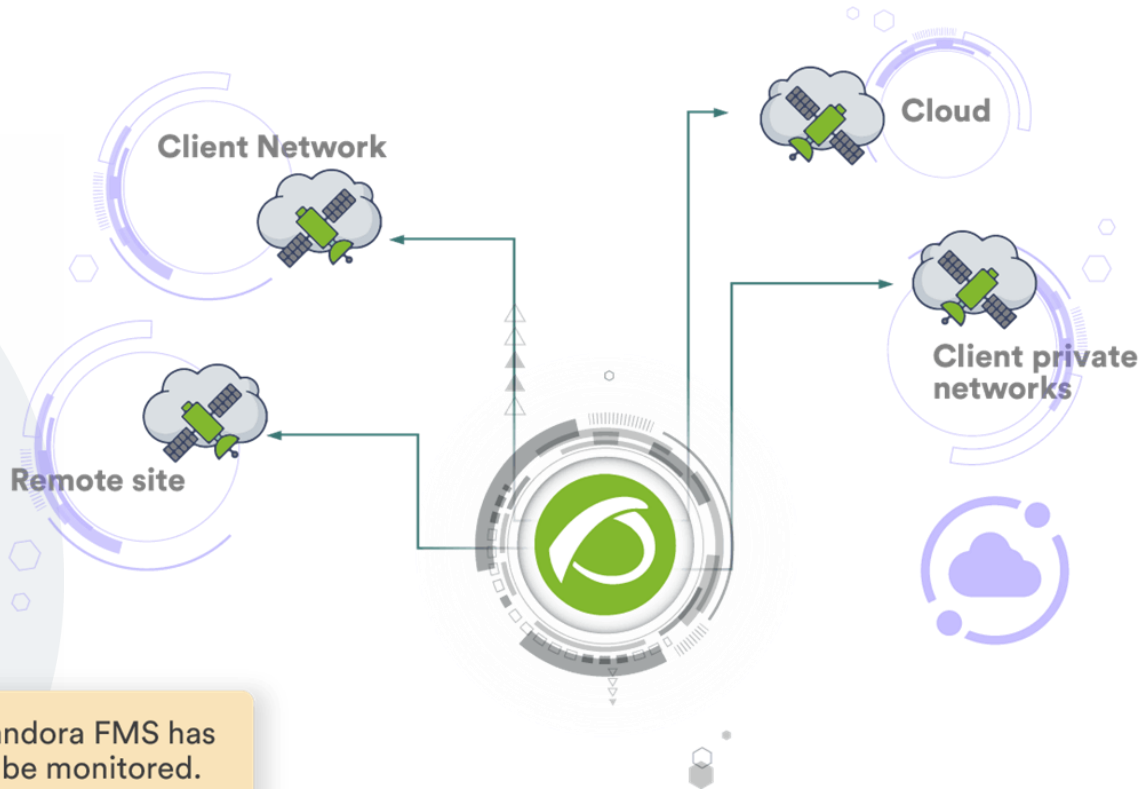
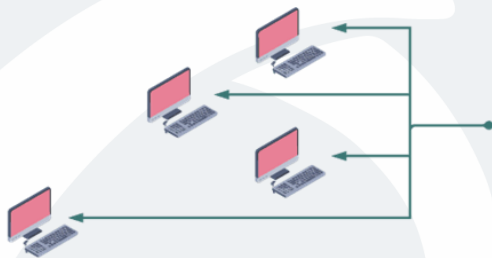


HIGH SCALABILITY & CENTRALIZATION

# One console to manage them all



**Satellite Servers:** Monitor up to 50,000 remote devices with a single Pandora FMS Server. Split the load using the isolated Pandora FMS satellites.



Satellite is a tool used when Pandora FMS has no visibility of the networks to be monitored.

# One console to manage them all



HA in all servers and components: database, servers, console and agents.

VIEW NODES ⚙️ 👁️

IP	Node label	Agent status	DB Repl.	DB Status	Sync	SSH	DB Role	Cluster Role	Status	Seconds behind master	Virtual IP	SQL version	DB version	Mode	Pending action	Admin	
db1	db1						Master	Master	Online	192.168.80.118	-	757-	MR 49	Enabled	-		
db2	db2						Master	Slave	Online			-	757-	MR 49	Enabled	-	

[Refresh](#) [Register node](#)



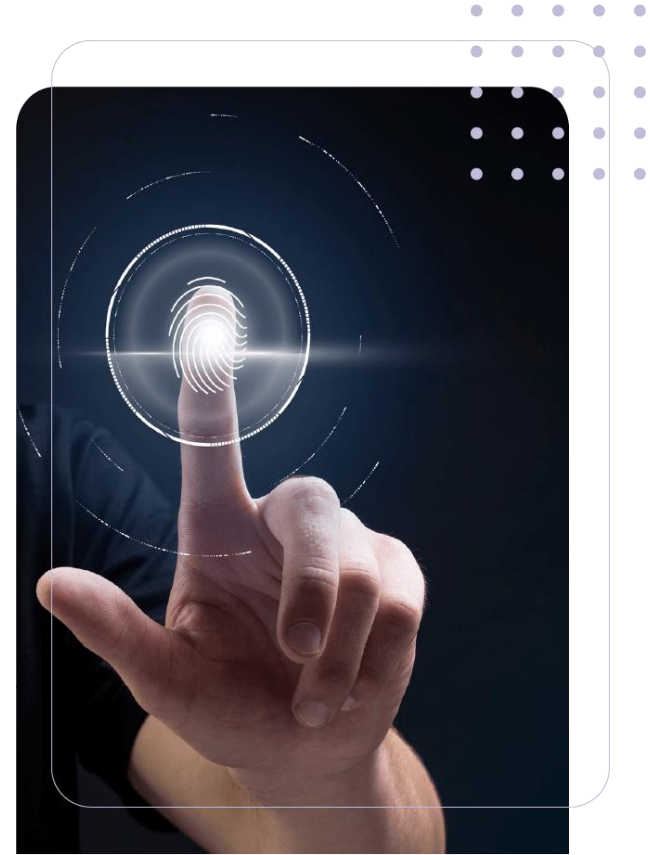
**MONITORING  
FOR MSP'S**



# On-Premise for SaaS Offering



- Pandora FMS is an on-premise software (Subscription or Perpetual licencing) perfect for offering SaaS or tailored monitoring service solutions.
- Licence scales smoothly without any limitation. We grow with you from 100 agents.
- Totally UI customization (even OEM licencing).
- 100% multitenant.
- Multilanguage.
- Satellite allow to deploy remote servers with extra light requirements to monitor and discover devices in custom sites.



# IoT PROJECTS



# Android Agents

Our android agent can be adapted to run on embedded devices like on-board entertainment, industrial controllers, smart multimedia systems and others.



**PANDROID**

# Android Agents

Raspberry is a perfect platform to embed external sensors and add any data from the real world to monitoring / IoT projects from a small fraction of the cost of other solutions.

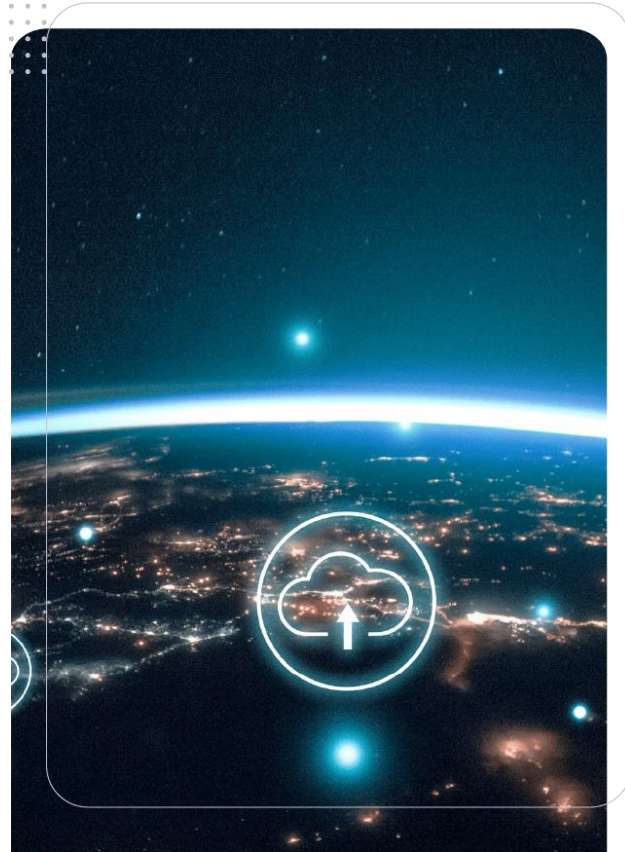


# OEM & INTEGRATIONS



# OEM Packaging

- Custom installers (Agents, servers and console).
- Customized windows installers.
- Customized info texts (product, version, vendor).
- Customized UI (themes).



# THANK YOU

<https://pandorafms.com/>

+34-91559-7222

[info@artica.es](mailto:info@artica.es)

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